Effects of the New FM 3-0 <u>Operations</u> (Final Draft)
on
Combat Service Support Planning Models

A Monograph
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ABSTRACT

Effects of the New FM 3-0 Operations (Final Draft) on Combat Service Support Planning Models, 43 pages.

A gap exists between how logistics planners and operational planners see the military environment. This leads to asynchronous planning and flawed solutions. The central theme necessary to merge these two worlds is the common operational picture. By understanding the nature of the problem, efforts can be mutually applied to strengthen the impact of the solution while adequately protecting friendly vulnerabilities from threat influence. This common operational picture rarely forms without a common frame of reference. Nested doctrine tempered by operational art provides the foundation of that framework as it synchronizes planning models and illuminates the critical relationships between them prior to force application.

The operational planner depends on clear, comprehensive doctrine to guide and inform the planning process. Shared understanding essential to collective staff work requires a common doctrinal base that is useful, relevant and nested with parent doctrine. Army CSS doctrine must parallel maturation of joint operations doctrine for the logistical focus to remain sharp.

The perspectives from which operations and logistics planners respectively view military problems are fundamentally different, yet they have similarities and a mutual purpose. The purpose of logistics is to enable operations. The purpose of operations is to gain the advantage relative to the threat. Both focus on defeating the threat. Neither of these efforts can be successful without the other. In abstract terms both perspectives must merge to highlight relationships necessary to defeat the threat while perpetuating friendly strengths. This holistic approach to problem solving relies more on synthesis of comprehensive doctrine than on branch specific analysis.

No single battlefield operating function (BOF) can expect to be successful alone. Nor can the sum of all functions achieve success operating in a stovepipe-like manner. Shared situational awareness is essential to combining individual functional strengths into one powerful effort directed at critical vulnerabilities of the threat. To accomplish this, a common operational picture must develop early in the planning process.

New and revised concepts presented in FM 3-0 Operations (Final Draft) act as a magnifying glass to unify the BOF and focus their collective strength on a military problem. These concepts, when incorporated into Army CSS doctrine will promulgate nesting and aid in synchronizing CSS efforts with complementary combat and combat support functions towards a singular purpose in time and space. Concentrating this collective strength against threat vulnerabilities stands a much better chance of reaching enemy centers of gravity and forcing culmination as early as possible.

Field Manual 100-10 Combat Service Support (Draft), although under revision, does not adequately portray the importance of the COP and should embrace those concepts from FM 3-0 Operations (Final Draft) to enhance current CSS planning models and increase the potential for CSS to enable the force.

This monograph explores four specific concepts presented in FM 3-0 Operations (Final Draft) that are essential for CSS doctrine to evolve. These concepts provoke an awareness that must reside in the mind of every planner regardless of branch. By embracing Operational Art, the Army spectrum of operations, and the means to describe it, FM 100-10 Combat Service Support (Draft) will successfully merge the art and science of logistics into a relevant and essential part of the operational spectrum.

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Chapter One: Introduction

The purpose of this monograph is to determine if the new FM 3-0 <u>Operations</u> (Final Draft)[1] significantly changes Army Combat Service Support (CSS) planning models as presented in FM 100-10 <u>Combat Service Support</u> (Draft). The FM 100-5 <u>Operations</u> (Draft) title was changed to FM 3-0 <u>Operations</u> (Final Draft).

A primary focus of military doctrine is problem solving. Military planners view complex problems from many different perspectives. Solutions require unity of effort from multiple battlefield operating systems (BOS). This implies similar thought processes based on common models to facilitate unity of effort in planning as well as execution across the BOS. The ability of the commander and staff to develop a shared understanding of the nature of the problem begins with understanding doctrine.

This monograph focuses on the relationship of Army operational and CSS doctrine and how this doctrine aids planners in problem solving. Specific attention is given to how FM 100-5 <u>Operations</u> (Draft) guides operational planners towards a common understanding of military problems and provides a common framework and language to assist in problem solving. In turn, FM 100-10 <u>Combat Service Support</u> (Draft) is reviewed to determine if logistical and operational doctrine provide a common basis for problem solving.

Research concluded that a gap exists between operations and logistics planning models at the operational level. This gap hinders development of shared understanding within planning staffs. This monograph proposes that the bridge available to span this gap is operational art.

Applying operational and CSS doctrine to solve a military problem implies coordinated effort stemming from a common base of knowledge. An example may be how the brain synthesizes input from the eyes. Each eye is capable of independent movement and a single field of view, but data from both are needed in order for depth perception i.e., a proper view of the object to be viewed. The relationship between operations and CSS is analogous to this example. Each has unique perspective. One eye may be dominant, but both are required to develop a correct image and determine its relationship to the viewer.

Army operations doctrine, the dominant eye, has been significantly updated. The recent revision of FM 100-5 <u>Operations</u> suggests a need for prompt review of how operational planners think about sustaining

a military force in a dynamic global environment. United States Army Combat Service Support doctrine, the other eye, has witnessed numerous developments in joint and Army operational doctrines with little or no changes to CSS fundamentals. In order to maintain depth perception, both "eyes" must be focused on the problem. Consequentially, Combat Service Support doctrine should also be revisited.

Recent military force structure reductions and increased potential for other than war situations focused on stability and support operations challenges traditional CSS planning models that are focused on traditional offensive and defensive operations. Field Manual 100-10, Combat Service Support, is the Army's keystone manual for logistics doctrine. This document was last revised in 1995. Since that time, joint logistics doctrine and Army operational keystone doctrine have changed significantly. With the demise of its peer competitor (Soviet Union) the operational environment has seen revolutionary change. The time for review is now.

The argument presented in this paper is meant to challenge operational planners' current understanding of how to think about logistics and CSS planning at the operational level. The results of this analysis do not suggest a need for fundamental change in Army CSS doctrine. More specifically, the study makes recommendations for how FM 100-10, Combat Service Support (Draft), can best incorporate concepts from FM 100-5 Operations (Draft) and Operational Art to communicate CSS doctrine across the full spectrum of operations.

This paper examines FM 100-10 Combat Service Support (Draft) through the lens of military logistics theory and emerging operational concepts contained in FM 100-5, Operations, (Draft). Specific concepts presented in FM 100-5 Operations (Draft) form criteria used to evaluate the potential of FM 100-10 Combat Service Support (Draft) to nest within Army keystone doctrine and facilitate development of a COP early enough in the planning process to set conditions for success.

The environments in which Army operations occur are *Offense, Defense, Stability and Support* (ODSS) operations.[2] These environments become the foundation upon which the COP builds. Two methods of framing operations within these environments are the *Close, Deep, Rear* Methodology and the *Decisive, Shaping, Sustaining* Methodology.[3] To communicate ideas leaders must *Visualize, Direct* and *Describe* so that superiors, peers and subordinates clearly understand military endstate.[4] At the strategic and operational levels of war, leaders experience cognitive tension resulting from translation of political

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aims into military objectives. Logistics planning is no exception. Army operational CSS doctrine must guide planners and commanders toward developing a COP so that superiors, peers, and subordinates clearly understand the logistical conditions that make achievement of the military endstate possible.

The linkage between the theory of war, military logistics theory, joint logistics doctrine and Army CSS doctrine is particularly important as the levels of war (Strategic, Operational, Tactical) squeeze closer together in a diverse world environment where the Army holds a significant logistics role in joint operations. This convolution of relationships confuses planners and often provokes stovepipe-like defensive reactions that dissolve the roots of the COP until the planning process becomes paralyzed. All planners must understand how Army CSS links to joint logistics doctrine and associated theories. This understanding enhances the importance of Operational Art as the bridge that spans the operations-logistics gap and facilitates development of the COP.

By promoting a clearer understanding of logistics and associated CSS means to accomplish it, observations within this monograph are presented to more fully enable development of a common operational picture (COP) among planners on operational staffs. Criteria to conduct analysis also consider facets of Operational Art.[5] The resulting conclusions from this study may be useful to align CSS doctrine (FM 100-10, Combat Service Support) with the direction of the new FM 100-5, Operations (Draft) manual.

Chapter two sets the stage by describing the nature of logistics. Chapter three addresses the purpose of doctrine and describes how doctrine aids interpretation of military logistics theory. This purpose provides a foundation for evaluating strengths or shortfalls in current Army Operational CSS planning models. Chapter four captures the essence of Army doctrine as it relates to CSS planning and explores new concepts proposed by revised FM 100-5 Operations (Draft). Chapter four evaluates these concepts through a CSS lens using criteria mentioned earlier and explores the gap between logistics and operational planning models. The conclusion of this paper identifies shortfalls of current Army CSS doctrinal planning models and stresses crucial relationships essential for sound CSS planning models at the operational level. It presents recommendations for essential changes, in abstract form, in the conduct of operational level CSS planning reflected by FM 100-10 Combat Service Support (Draft).

The operational planner depends on clear, comprehensive doctrine to guide and inform the planning process. Shared understanding requires a common doctrinal base that is useful, relevant and nested with

parent doctrine. Maturation of joint operations must be paralleled by Army CSS doctrine for operational focus to remain sharp. The theme of this monograph is to promote continued synthesis of art and science that enables CSS planning models to evolve and mutually support keystone doctrine.

Chapter Two: The Nature of Logistics

The dominant nature of operations over logistics continues to permeate the planning environment. Problem solving implies action. Action, most often, requires resources. Few U.S. Army doctrinal manuals approach operations and logistics as equals and staff planners rarely treat them as such. Although this disparity exists both are critical to success. It is important to understand that the two are complimentary. Breaking the paradigm that one is more important than the other will bridge the gap between operations and logistics planning. Operations and logistics both have a common aim i.e., solving the same problem.

Although operations and logistics are oriented on solving the same problem, they are clearly different functions. These two functions often run in parallel to one another during the planning process. Synthesis of the two is necessary to effectively solve the problem. This paper addresses the COP from a logistics perspective. A means to establish a common ground between operations and logistics is needed so that both have a COP of the same problem. The nature of logistics is described in the remainder of this chapter. This will help establish how problems are viewed from a logistics perspective.

Logistics is described by Joint Publication 4.0 as a process, a science, an art and a bridge.[6] All of these terms are within the context of military applications. The Department of Defense (DOD) Approved Terminology Index defines logistics as "...the science of planning and carrying out the movement and maintenance of forces."[7] Marine Corps Doctrinal Publication MCDP 4, Logistics makes a distinction between military and civilian logistics. The warlike of defines military logistics makes it fundamentally different.[8]

Increasing requirements made logistics more complex. Over time military operations extended beyond local boundaries to protect national interests. Technology incrementally improved the reach and lethality of fighting forces. Large scale maneuver, and the need to project military power beyond national borders, forced innovative development of supply and sustainment methods that could keep pace with expanding armies, extended time and growing battle-space.

War is no longer the sole environment in which the United States applies military force. War and Military Operations Other Than War (MOOTW) now form the canvass on which U.S. Army commanders apply their art.[9] Although war is the reason U.S. Army forces exist, war does not occur with a frequency commensurate with maintaining a large standing Army, however, the need to maintain peace and protect

U.S National interests requires an army capable of deterring war and, should it occur, to fight and win.[10] The tension created by economic strains of maintaining an army and lack of a peer military competitor has once again drawn the active U.S. Army force structures to the lowest level since WWII. Combat Service Support doctrine must be able to sustain operations despite these historical cuts in force structure.

Logistics remains an inseparable facet of conflict. Arguably logistics has existed as long as war. It is difficult to visualize military victory without possessing and assembling means to achieve it. Many of the factors, which affect war in general, are equally applicable to logistics. Human factors, chance and friction all affect logistics, as they do maneuver, in the context of the overall complex nature of war.[11] These factors can be either an advantage or a disadvantage.[12] Logistics is no exception. Relating Clausewitz's On War to the domain of logistics may be a monumental reading task, but nonetheless, the value of his work is quite relevant to how leaders think about logistics.

More recent U.S. military writings and doctrinal references add or build upon Clausewitzian theory. The Marine Corps logistics manual, MCDP 4, Logistics describes logistics as a complex system. This manual also details factors that affect logistics and reveal its character. The human element, friction, morale, uncertainty, violence and disorder all have the potential to unhinge operations, however, each of these can also work to the advantage.[13] The 1993 version of FM 100-5, Operations also presents logistics as "...an over-arching function that must encompass the range of military operations."[14] The manual identifies characteristics of logistics from a military perspective. The manual does not reach back to any theoretical basis and it does not explicitly identify CSS as the means by which logistics actually gets implemented[15]

Understanding the fundamental nature of military logistics is necessary to understand the relationship of Army CSS Doctrine to theory. A succinct definition of logistics is difficult to assemble because it is infinitely complex. Depending upon the perspective from which one views logistics there are many possible definitions. The purpose of this paper is to explore on how staff planners interpret logistics planning within the scope of written doctrine. Rear Admiral (Retired) Henry E. Eccles observed that a precise definition may not be necessary, however, failure to understand the nature of logistics, and its relationships with other systems, may result in bad planning and ultimately a reduction in combat effectiveness.[16]

Written almost 35 years ago, Henry Eccles book, Military Concepts and Philosophy, (Chapter VI, *Concepts of Logistics*) provides an excellent description of the relationship between logistics and operations. Logistics is an inseparable part of waging war and cannot be treated as a separate entity distinct from operations. The moment operations are separated from logistics, the holistic fabric of strategy begins to unravel. Joint doctrine has recently relieved some mental tension by linking logistics and operations, however, the separation of the two continues. In general, logistics continues to be subordinate to operational concerns.

The basic elements of logistics are requirements, procurement and distribution. The combination of these elements forms the foundation for logistics, but not the structure. Relationships between these elements manifest themselves in the form of logistic principals and functions that perpetuate the purpose of military logistics to meet the needs of the force. Eccles states the function of logistics is to bridge the gap between economic resources and the needs of the military force.[17] The basic concept of producer - consumer best represent the idea of logistics. This simple vision is not hard to grasp, but picture a sliding bridge that spans the gap between each level of war (Strategic, Operational, Tactical) so that all levels are not necessarily connected in sequence and can be *directly* connected to the economic base in some way. Eccles cites Duncan Ballentine's concept of logistics where he describes logistics as a "...total process by which the resources of a nation - material and human - are mobilized and directed toward the accomplishment of military ends..."[18]

Without spending too much time searching for a precise definition of logistics, Eccles' and Ballentine's thoughts can be translated into one broad concept. "...[T]he logistics process is thus the means whereby the raw warmaking capacity of the nation is translated into instruments of force ready to be employed in pursuit of strategical or tactical objectives. As such it is both an economic and a military undertaking."[19]

Referring back to Henry Eccles' producer-consumer concept, a continuous circle develops. The national economy, possessing the raw material and industrial capacity yields to military logistics, which relates the capabilities of the economy to the military parameters of time, space, combat power and purpose. Military logistics, in turn, employs combat service support systems to provide for the force drawing upon available assets. The military purpose is nested within the national purpose.

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Another point of view that posits the inseparable unity inherent in operations and logistics is found in Kenneth N. Brown's Strategics, the Logistics-Strategy Link. Brown argues that "…logistics is the branch of military art and science that underpins the fighting capability."[20] In his essay, Brown acknowledged that the strategy always took first place in the study of conflict. He argued that logistics, although not as exciting as strategy, deserved equal time if a nation expected to be successful in application of military power.[21] Brown stressed *responsiveness* as the common thread between strategy and logistics…without responsiveness, strategy and logistics do not move forward.[22]

Sun Tzu's Art of War treated logistics as an essential of war. In his discussion of prolonged warfare in chapter two, *Waging War*, Sun Tzu pointed out that the sheer weight of logistically maintaining an army over extended distance and time presented a significant limitation if the commander did not make adequate provisions for sustainment of the force. Although this is a common understanding today, and clearly reflected in doctrine, Sun Tzu also realized that the physical needs of an army were primary considerations when preparing for battle. When the approach toward an enemy required speed, then troops moved faster; but the physical requirements did not go away. Materiel and services were still required to enable the army to sustain protracted combat after the initial engagement.[23]

As one fast-forwards to the time of Clausewitz, fundamental thinking about the necessity of logistics does not change. What is noteworthy, however, is that even by this time a separate theory of military logistics still eluded military thinkers. Carl Von Clausewitz deeply explored the timeless aspect of conflict and the inherent nature of war itself. His thoughts on war provide insight and provoke reflection on the interrelationships between the many facets of conflict. Although logistics was not the primary purpose of his work, almost every chapter holds logistical implications and reveals the complexity involved in the give and take of organized conflict. Many of his observations, although Sun Tzu's writing were unknown to him, retained fundamental threads from ancient battle dictums that still persist today.[24]

Carl Von Clausewitz's model of the trinity (people, government, military) may also be considered as the first clear indicator that logistics was something more than simply supplying forces with provisions in the field for a fleeting battle. As a student of the theory of war drives deeper into the construct of this model, one sees that a break in the union of this triad potentially frays the umbilical cord that ties an army to its ultimate base of support i.e., the nation. The will of the people influences the political direction of the

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governing process, which in turn directs the conduct of the military. In modern terms, without the connection to an inherently civilian industrial base, military logistics does not possess the economic potential to meet the physical needs of the force. The will of the people to support political aims requiring application of military power enables an army to protect national interests, however, if there is no will, there is no economic support, hence, no army.

Logistics is derived from need. The sheer depth of a holistic concept of logistics conceals the complexity of this simplistic description. Carl Von Clausewitz's concept of the Trinity, mentioned earlier is a good example of such complexity. The basic needs of the fighting soldier required significant attention even in the earliest of organized battles. Over time, technology increased the lethality and operating range of military forces, but need remained constant. Resources to satisfy these needs originate from some source. Raw material, manpower and the means to acquire and produce the tools of conflict are inherently expensive and often limit the physical reach of a force. Popular support of an organized people forms the basis for a military force to exist. A capable economy creates conditions for those people to generate resources to support such a force. A central aim or unifying ideal is fundamental to establishing a link between the will of the people and the measures taken to employ a military force. Finally, a governing body is essential to represent the people and employ the force in the best interests of national will. All of this points to the concept of a nation-state which provides the necessary logistical resources for modern military forces to wage war.

Chapter Three: Doctrine, Theory and their Relationship

Before one can appreciate how the operator and the logistician view mutual problems, it is important to understand where respective mental models come from. Arguably, these cognitive tools are derived from theory, doctrine and history. History provides the empirical data to develop theory and doctrine. Institutional training draws lessons from history and helps to solidify a base of in order to develop doctrine. Planners rely on doctrine to create a common background for battlefield operating functions. Military forces operating with a set of common doctrine allows the overall force to be stronger than its individual elements.

Military Logistics Theory

Military logistics theory deals with needs. In a national military context, forces exist to protect the needs of the nation. The strength behind military forces is a nation's willingness to expend energy to achieve its strategic aims. The cost associated with achievement of this aim manifests itself in the logistics necessary to act in a positive way toward that goal. The goal or aim of a nation may be pursued in the form of war or military operations other than war. War or MOOTW creates a producer-consumer relationship between the nation and the military that is served by logistics. A major consumer of economic energy is a military force. Physical needs of troops and their associated equipment generate requirements. Resources are procured and arranged to meet these requirements. Once procured and assembled, these assets are then distributed to the force. This iterative process is enabled by scientific effort and perpetuated by artful application when resources are limited by cost prohibitive circumstances.

As one delves into joint publications, all references and descriptions of logistics adequately identify the important components of what appears to be a theory of military logistics. Unfortunately, there is no definitive work on the theory of military logistics. Military logistics theory seems to be embedded in the theory of war. This underscores the inseparable nature of war and logistics. What is evident though is the fact "...that logistics is defined less by a set of activities than by its results."[25] This statement reveals the difference between logistics and CSS. Logistics is the broad concept that establishes conditions for support to occur. Combat Service Support is the measurable result expressed in gallons, short tons, rounds or

customers served. Understanding the theoretical foundation of logistics aids in exploring the potential of CSS and the planning models associated with its use.

A theory of military logistics rests upon the same foundation as the theory of war. Within the context of Clausewitz's definition of war, "…a continuation of policy by other means…"[26] a complete theory of military logistics has four basic characteristics described by MCDP 4, Logistics: [27]

    (1) Military logistics theory presupposes the existence of a nation-state, or sovereign body that employs a standing military force to protect vital interests.
    (2) As military logistics potential increases, there is an inverse effect on short-term economic growth of a nation-state or sovereignty.
    (3) Military logistics is national responsibility requiring forward impetus. In other words, prepare now for potential conflict.
    (4) Military logistics has a war-like purpose. It is continual and always "on." It functions similarly during conflict as well as periods of peace.

Each of these characteristics illustrates how military logistics theory is a complex system within a larger system. The characteristics describe the environment in which military logistics occurs and the relationships of military logistics with the nation state which is its source of strength and purpose. [28]

Unlike logistics in the civilian world, military logistics functions in a lethal environment constantly threatened by a thinking enemy. During periods of conflict, military logistics actively seeks solutions to the logistical problems of war. During periods of peace, military logistics does not rest but prepares for future conflict while sustaining peacetime forces. Lethality or the warlike purpose of military logistics sets military logistics apart from civilian logistics.

Military logistics is a complex combination of military art and science. Resources are applied in time and space to realize the physical needs of a military force to enable such a force to accomplish its purpose. A complex system in itself, military logistics finds its purpose in a larger system called war. Likewise, the concept of war does not exist without logistics to enable its elements to achieve political aims. The inseparable bond between the theory of war and military logistics obscures the latter's complete identity.

Synthesis of a theory of logistics requires an understanding of the theory of war. There is a clear balance between the theories of war and military logistics. One cannot really exist without the other. Likewise, Clausewitz's theories of war also depend on the existence of a nation state. It is a necessary condition. The fact that war cannot exist without logistics illustrates the very purpose of military logistics.

Lieutenant General "Gus" Pagonis summed up military logistics by describing those that practice it. "Logisticians deal with unknowns. They attempt to eliminate unknowns, one by one, until they are

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confident that they have done away with paralyzing surprises."[29] Joint doctrine accurately describes military logistics as a science, a process, a bridge and an art. Science provides the facts that form the basis of deduction. Much of logistics involves factual data that are capable of being resolved in a very scientific and rational way. Process describes the framework of a problem-solving model from which logistics draws its purpose. Military logistics bridges the gap between the economic base of a nation-state and the forces that protect national interests as it strives to meet the physical needs of the force. Finally, like war, much of logistics cannot be reduced to simple facts and scientific analysis. Some aspects of logistics require a more artful approach to problem solving. This last statement deduces that military logistics is a complex system.

Doctrine

The complex nature of logistics naturally complicates the means to conduct it. Combat Service Support doctrine represents the operational concept by which Army forces arrange personnel, materiel and services in time and space to build and sustain combat power. In order to review, validate, or change, U.S. Army CSS doctrine, one must understand the purpose of doctrine and how logistics functions within the theory of war.

The purpose of military doctrine is to capture the interpretations of the theory of war and communicate a shared understanding of problem solving so that military operations can be applied to meet national aims. A common base of reference is essential to synchronize a large, diverse organization focused on a single purpose to protecting national interests. The value of military doctrine lies in the ability to learn from the past so that military forces can adapt to the present and the future. Doctrine is not timeless It changes with the environment even though recognizing change is not always obvious. Command, control, and communication is improved by organizations operating with a common doctrine for problem solving.

Doctrine is written for the sake of communication. Communication facilitates command and control as well as learning. Interpretation of doctrine occurs within the scope of the user's ability to apply military assets and capabilities to meet political aims. Military planners and commanders turn these interpretations into plans designed to guide action toward specific objectives and then to control those actions toward an end. Common threads in this process are human nature and shared understanding of the nature of war.

Doctrine is a guide not a rule. Doctrine provides a theme essential to creating shared understanding of the environment applicable to military effort. History has shown no two conflicts to be exactly alike.

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However, similarities do exist. Doctrine takes this into consideration and attempts to identify the nature of conflict in broad terms so that doctrine is flexible enough to meet current and future needs.

Ideally, written doctrine promotes mutual understanding, uniformity and clarity of purpose. The strength of the U.S. Army, as a complex organization, is based on a shared understanding of purpose. Distributed operations that require concentration in time and space reinforce the need for communicating purpose quickly and efficiently so that control is optimized. Doctrine provides the foundation for purpose. Doctrine binds the levels of war (Strategic, Operational and Tactical) together while maintaining uniqueness important to each one. The holistic theme of doctrine promotes mutual understanding of the problem at all levels of war. This understanding, in turn, promotes uniformity of action and clarity of purpose, which are crucial ingredients of successful distributed operations. A final benefit is that this perspective also promotes learning.

Doctrine enables command and control. In order for communication to be effective, ideas must transfer without losing their distinctiveness or original meaning. A useful example to illustrate this is the game of chess.

Picture a chessboard where each square represents a subordinate chessboard embedded within the larger one. The rules of chess are clear when playing on a single board. When depth is added by viewing the playing board as a series of smaller boards, complexity increases. The object of the game remains the same. However, the environment is somewhat different and smaller battles must be won to set conditions for the larger contest. The infinite number of possible outcomes relative to each square (a chessboard in itself) determines whether a single move at the next higher level is possible. Doctrine provides the point of departure, or common reference point, from which all action starts. Doctrine forms the link that connects each square of the chessboard into a holistic mental picture. Players must think ahead on two planes. First, strategy of the parent board must be determined. Then, smaller battles must be won on the smaller board to permit the next move on the parent board to continue. Although a simplistic example, the point is that tactical battles are guided by an overarching strategy. Success depends upon complex relationships between the levels of war.

Operational military doctrine serves to define a framework for exchange of ideas in military organizations solving complex problems. Doctrine considers existing assets and variable conditions. The

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value of Army operational doctrine lies in its two-fold ability to communicate a shared understanding of the theory of war and the ability of leaders to communicate its application through a common language. Nested within a comprehensive Army operational doctrine are subordinate functions crucial to the holistic nature of how the U.S. Army contributes to national defense. *Combat Functions* such as Intelligence, Maneuver, Fire Support, Air Defense, Mobility and Survivability, Logistics and Battle Command all combine to"…help the commander build and sustain combat power."[30] Each function has its own doctrine that guides application of its assets within the parameters laid by keystone concepts found in FM 100-5, Operations (1998 and Draft 2000).

Regardless of the echelon, doctrine must guarantee direct communication for coordinated military actions to meet strategic aims, therefore it must clearly articulate a model or base of reference for communication to occur. Doctrine must ensure that each level of warfare is nested with the next higher level e.g., operational with strategic. Also, subordinate doctrine for combat functions must be nested within the Army overarching operational doctrine. Communicating ideas face to face and over great distances is the glue that holds this complex system together and promotes control. The reality of joint and multinational cooperation creates a need for this *sharing* to extend beyond the boundaries of a single service e.g., the Army. This is the task of joint doctrine.

New ideas and shifting environments force change upon existing doctrine. United States Army doctrine originates with a keystone primer in FM 100-5, Operations (Draft). This manual, pending publication, forms the base on which subordinate doctrine is formulated, developed and synchronized with other battlefield operating systems to allow the Army to function as a single entity. The same is true regarding the concept behind joint doctrine. Joint doctrine will shape how Army doctrine is developed to ensure it is nested within the higher purpose of joint doctrine.

The revised concepts presented in FM 100-5 Operations (Draft) may not change interpretation of theory, but it will provoke a fundamental change in how military leaders should think about the spectrum of conflict. This will have an impact upon subordinate doctrine and create a chain reaction of necessary changes to ensure that Army subordinate functional doctrine is nested within the guidelines of the new manual. As a professor in the School of Advanced Military Studies observed; "A solution to a problem often presents a whole new set of problems that require solutions."[31] This statement speaks to the

complexity of the environment in which the U.S. Army operates today and to the unique balance that doctrine must keep as forward looking planners and commanders apply its principals to future employment of the Army. Changes to doctrine has led to intense arguments. Doctrine must be current and future oriented. At the same time the Army must maintain readiness now! Training is the bedrock through which the Army retains its capability to meet the needs of the nation, regardless of what the future looks like. To train, the Army must have a shared understanding of what to train for, how to equip forces and how to view the environment in which it will operate. Changes in the spectrum of operations imply subsequent review of subordinate doctrine so that nesting is coherent and complimentary.

Interpreting doctrine requires synthesis to occur. Synthesis of emerging doctrine is impossible without considering all facets of military operations. All planners must fully understand the holistic nature of Army operational planning. Combat Service Support, and its relationship to operations is a facet that cannot be ignored. Common shared understanding of a military problem requires clear doctrine to guide commanders and staffs in planning efforts. It is critical for all military leaders to realize that in order for a common operational picture (COP) to form, no planner can ignore the inseparable bonds that link all of the combat functions into a complex holistic system.[32]

The Relationship between Theory and Doctrine

Theory forms the basis from which doctrine results. Theory is "…a coherent group of general propositions used as principles of explanation for a class of phenomena…"[33] The key term in this definition, with respect to military context, is *general*. The phenomenon is war. War is not an exact event yet precision and synchronization are often necessary to ensure success. To produce these conditions on a routine basis requires some form of basic guidance that is particular to the character of both the organization and the environment in which it operates. Doctrine communicates theory through two means. First, doctrine attempts to communicate a common shared understanding of how theory applies to the purpose and subsequent actions of a given organization. Second, doctrine establishes a base of knowledge, derived from historical example and extrapolation that can be drawn upon to guide action in the future. The most basic function of doctrine is to communicate which essential to command and control.

Combat Service Support doctrine must consider a complex environment where operational strengths and weaknesses often develop in the form of relationships between conventional components of conflict.

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As a result of technological advancement and the industrial revolution, CSS doctrine faces new challenges as the Army steps into the 21st Century. A diverse environment and uncertain global future requires reflection on trends in military logistics regarding how planners view the environment of conflict and the Army's role in it. The most noteworthy operational trends include:

- Expanding battlespace
- Continuing compression of reaction times during operations
- A wide variety of missions, many of which lie outside the traditional definitions of war or combat
- Expanding use of advanced technology by military forces
- Ever-increasing integration of military logistics with the commercial world[34]

These trends must be considered by a sound Army CSS doctrine to enable distributed operations to remain successful on a global scale. Additionally, doctrine must account for advancements in enemy capabilities, organizations and potential.[35] Technology has enabled potential adversaries to employ asymmetric means to delay, disable or defeat advancements in U.S. military capability. Asymmetric trends include:

- Advanced cyber capability
- Alternative doctrines
- Terrorism
- Information operations
- Chem/Nuke capabilities (and policies)[36]

The above trends point to a need for review of current doctrine. More importantly is the need for operations and logistics doctrine to become more integrated in terms of how each respective discipline views the environment. There must be a common base of reference to provide a point of departure. Problem solving from either an operational perspective or a logistics perspective produces a myopic condition that can lead to failure. Each view must be synthesized into one COP before solutions can be applied.

Military principals of logistics shape the nature of support and the means to provide for the needs of the force. These principals are taken from theory as well as authoritative doctrine. Joint doctrine identifies the principals of logistics as Responsiveness, Sustainability, Survivability, Attainability, Simplicity, Flexibility and Economy.[37] These principals represent the attributes required of a logistics system to meet the needs of a modern joint force. They frame the context of the nature of logistics as it relates to military action and guides the users of doctrine toward a common shared understanding of successful implementation of theory. In addition to principals, joint doctrine also identifies considerations to further

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enable logistics success through means available...namely Combat Service Support (CSS). These

considerations include:

    (1) Logistics as a Factor in Determining Objective
    (2) Coordination of Logistic Planning With Operation Planning
    (3) Forward Impetus
    (4) Balance Between Combat Forces and Logistic Forces
    (5) Command and Control of Logistics
    (6) Apportionment and Allocations
    (7) Accommodation for Wartime Requirements
    (8) Logistic Discipline
    (9) Movement Control
    (10) Deployment Information Control
    (11) Deployment Information Flow
    (12) Logistic Reserves
    (13) Industrial Base Requirements[38]

Each of these considerations serves two basic purposes. First, they focus sustainment efforts on

priorities essential for logistics support to enable the force. Second, they link logistics and operations to

communicate a more holistic picture of how the relationships between logistics and maneuver develop and

compliment one another. Once again, the common thread is *responding* to the physical needs of the force.

Joint doctrine communicates the accepted concept of applying resources to satisfy these needs over time

and space.

Chapter Four: New Doctrine or New Understanding?

Over the past decade, joint doctrine has matured to an authoritative level. The joint publication series represents a full spectrum approach to military operations. Although joint concepts are broad and overarching, they are specific enough to provide a common framework and direction for joint military operations. The impact joint doctrine has on Army doctrine is significant. Military operations, both today and in the future will most often be joint. The importance of nesting Army doctrine within joint doctrine has been a theme of revision for several years. This nesting, coupled with a changing world environment, has changed Army doctrine. Perhaps the military theory has not changed. But the environment of conflict has definitely changed. The challenge is to capture this change and to develop sound doctrinal concepts to accommodate this new environment. This new perspective will impact Army doctrine and its subordinate functional areas as well.

This chapter captures the essence of Army CSS doctrine as it relates to operational planning. Criteria used to evaluate CSS planning models presented in FM 100-10 Combat Service Support (Draft) are four of the new concepts proposed by revised Army keystone doctrine in FM 100-5 Operations (Draft). These concepts are: The Operational Framework; the Army Range of Operations (Offense, Defense, Stability and Support); the Decisive, Shaping, Sustaining Methodology, and the Visualize, Direct Describe Methodology. The intent of analysis is to identify and define the gap between operations and logistics planning and stress key relationships to be included in FM 100-10 Combat Service Support (Draft) essential for sound CSS planning models at the operational level.

Joint Logistics Doctrine

Joint doctrine exists to set conditions for development of a common shared understanding of problems between the services e.g., Army, Navy, Air Force and Marines. Joint doctrine posits that "[l]ogistics is the foundation of our [U.S.] combat power..." [39] and is the authoritative source for U.S. Army logistics planning. Joint Vision 2010 introduces development of four operational concepts under which forces will fight in the future. These concepts are *Dominant Maneuver*, *Precision Engagement*, *Full Dimensional Protection* and *Focused Logistics*. Each represents America's core military strengths. A common thread to

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each of these concepts is full spectrum dominance. [40] Focused logistics should be considered the wellspring of U.S Army CSS doctrine within the joint theme of Full Spectrum Dominance.

Concepts presented in Joint Pub 4-0 are linked to military logistics theory but contain unique joint military characteristics. The logistics essence of Joint Vision 2010 and Joint Pub 4-0 is a flexible, responsive logistics system that is wholly integrated into a continuum of conflict. Specifically, "[f]ocused logistics will be the fusion of information, logistics, and transportation technologies to provide rapid crisis response, to track and shift assets even while enroute, and to deliver tailored logistics packages and sustainment directly at the strategic, operational, and tactical level of operations." [41]

Joint military logistics functions include supply systems, maintenance, transportation, general engineering, health services and miscellaneous services. Each function is tied to respective basic elements of the logistics process, which are acquisition, distribution, sustainment and disposition. [42] Supply and services are the physical manifestations of logistics that meet the needs of military forces. Joint logistics doctrine guides operational logistics efforts across service boundaries so that intra- and inter-service concepts of logistics provide adequate support to components of joint and combined forces while allowing each service to remain focused on its particular mission but for each service to be mutually supporting.

Joint doctrine acknowledges three levels of war (strategic, operational and tactical) with corresponding levels of logistic planning. Like the levels of war, logistics support within these levels possesses unique characteristics but contains a common thread rooted in logistics theory. These levels are interrelated and inseparable. "All levels of logistics involve combat service support..." [43] which represents means to accomplish logistics tasks in support of military operations. The strategic level of logistics links the nation's economic base with military requirements of combatant commanders. The operational level arranges support in space and time to enable CSS to occur. The tactical level mainly deals with CSS sustainment functions of the force in the areas of manning, fuel, arming, fixing, sustaining and moving the force.

The full spectrum of operations is another key aspect of joint doctrine as it sets the stage for application of Army assets and responsibilities inherent in Army operations conducted in a land-centric theater of war. Joint forces must be able to operate effectively under conditions of peacetime engagement, deterrence and conflict prevention and war. Joint Vision 2010 reiterates the importance of the total task of

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moving from concepts to capabilities. Simply changing doctrine is not the answer. Doctrine, education, training, organization and material support the implementation of such a program. Addressing each facet would require volumes, however, and are beyond the scope of this monograph. The proceeding paragraphs focus on written doctrine and its impact on how leaders think about CSS within the scope of logistics principals and the spectrum of conflict.

"Logistics is the process of planning and executing the movement and sustainment of operating forces in the execution of a military strategy and operations."[44] The focus of logistics, at the operational and tactical levels, reveals four broad areas of logistics responsibility that include materiel, personnel, services and facilities. Principals of logistics, proven over time as critical to producing and sustaining combat power, frame these areas of logistic responsibility. "The principals of logistics [responsiveness, simplicity, flexibility, economy, attainability, sustainability and responsiveness] complement the principals of war."[45]

The principals of war are incomplete without the complementary support of the principals of logistics.[46] The first logistics principal, *Responsiveness* is cornerstone principal providing the right stuff, at the right place, at the right time. Without a responsive logistics system that supports the concept of operations, all other principals are irrelevant since the needs of the force cannot be met within the commander's timeline. *Simplicity* aids in shared understanding and reduces complexity. *Flexibility* allows the commander to adapt to unknowns and enables responsiveness and economy. *Economy* reduces cost through prioritization and turns limited resource conditions into advantages. *Attainability* produces the minimum essential support required initiating military operations and helps commanders gage when an operation can commence. *Sustainability* acts as a measure of performance for the duration of operations. It looks forward at long-term objectives and measures the logistics capability of an operation to succeed. *Survivability* also measures projected performance and orients on the system's over-all potential to weather the stress of time, space and purpose to meet physical needs of the military force.

Joint doctrine stresses that integration of logistics with operations is critical. Time, space, resources and the enemy all impact the logistics process. As a system within a system, logistics may appear to exist as a separate entity on the surface. However, it is clear that it is part of a larger system, war. The complex nature of embedded systems often erodes understanding and creates friction. Joint doctrine serves to

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minimize friction by interpreting the principals of military logistics through an operational lens providing a common guide to coordinate sustainment action with operational maneuver and movement and minimize duplication of effort between services.

Logistics acts as a bridge between the capabilities of a nation to produce the tools of war and the military force requirements to wage it. Previous discussion of Eccles and Brown sets the stage for one to realize that this bridging is a two-way street; in fact it is a circle. Requirements lead to procurement, which leads to distribution. This in turn allows a fourth element to be inserted into the logistics cycle...sustainment. Sustainment implies both continuous action and subsequent improvements of both methods and materiel. In other words, the system forces leaders to learn from mistakes and improve upon the original model. This has led to the *sliding bridge* metaphor mentioned earlier where the link between the national economic base and operations within a specific level of war can occur without sequentially trickling down from higher to lower levels.

The potential for both contiguous and non-contiguous operations necessitates the concept of the sliding bridge to reduce the time lag between identifying a need and producing the product to satisfy that need. Some examples of such a relationship are strategic configured loads, organizational changes that increase repair by replacement emphasis transferring the time loss from the theater to the civilian industrial base and increasing velocity management, and strategic lift airframes that have operational and even tactical uses.

The art of logistics serves to unite all of the above and implies capitalizing on the human characteristics of creativity, innovation and awareness. [47] Understanding and synthesis of a myriad of concepts and complex systems makes the art of logistics possible. Central to employment of the art of logistics is the human factor, more specifically, that of the military planner or commander. Even in a technologically advanced environment computers are still unable to realize the intricacies of related systems within the scope of a theory of war. Experience, training and historical study set the conditions for artful execution of military logistics. Understanding the commander's concept is key to arranging assets over time and space to enable tactical success.

Sole reliance on analytical models and output from automated systems represents only the scientific aspect of logistics. Art requires much more. One-sided consideration of logistics and associated CSS to

accomplish it is only half of the task. Military forces operate in environments in which many uncontrollable factors (enemy, time, weather, and terrain) influence the relative success, or failure, of logistics efforts. Another factor is friction. As previously discussed, friction is a concept that defies algorithmic calculus, requiring human thought oriented on anticipation. This logistics principal is inextricably tied to all other principals and ultimately impacts on the responsiveness of the system to the tactical commander.

In summary, joint logistics doctrine sets conditions for unity of effort among the respective services. Joint Pub 4-0 is one authoritative source from which Army CSS doctrine is rooted. By capturing a uniform description of the nature of logistics, joint doctrine creates the parent-level chessboard, mentioned earlier, and sets the stage for inter- and intra-service cooperation promoting mutual support and reducing duplication of effort.

First, the will of a nation to bear the economic cost of war is directly related to the size and capability of the force maintained to do so. Strategic resolve becomes an empty threat in the face of a prepared or asymmetric enemy when national will has atrophied the force beyond the mobilization capability of the economic base.

Second, joint doctrine designates the Army as the logistics proponent for land-based operational support. This responsibility requires even closer scrutiny of CSS doctrine to maximize intra-service strengths and facilitate inter-service cooperation. The object is a CSS system that is capable of maximizing the appropriate balance of logistics principals over time and space to develop and sustain adequate combat power that meets the intent of the combatant commander.

Joint doctrine has slowly changed the way Army operational planners think about logistics. From the inter-service perspective, joint doctrine forces Army planners to think beyond land-centric support and sustainment models. Each Army CSS effort is based on joint logistics principals and considerations. Planning models at the operational level embrace land, sea and air considerations where only 50 years ago each service had its own separate logistics system. Jerome G. Peppers noted that during WWII, although military leaders recognized logistics was an essential of war, "…the United States appeared not to recognize it as a legitimate military requirement until almost mid-way through the war."[48] Peppers suggested that national defense planners assumed the economic strength of the nation would provide an

endless supply of men and materiel to the theater of war until victory was the result. The appearance of simultaneous theaters of war (Europe and the Pacific) in the early 1940's caught planners flat-footed and presented a sort of wake-up call. The lessons learned have certainly contributed to joint doctrine present today.

Army Doctrine

Growing in the shadow of joint doctrine, Army keystone doctrine is also under revision. It is important to note that FM 100-5 Operations (Draft) has not fundamentally changed how the Army does business, however, it has widened perspective on how to better conduct the business of war. The new document has a joint perspective and explains why nested concepts are key to integrated operations and it promotes a wider perspective on how to think about the realm of conflict and the Army's role in it. The manual clearly identifies some crucial relationships between science and art and appears to equalize the balance between analytical procedures and the intuitive processes. The new manual does a much better job of communicating how doctrine guides operations and it targets a more common audience. All of these attributes have a positive impact on CSS doctrine. The greatest product of the new revision is its approach toward how to think about military force application in a holistic sense instead of piecemeal. The new FM 100-5 Operations (Draft) gives the reader a better understanding of how CSS enables the force and a greater appreciation of relationships that can strengthen or degrade the combat force. It appropriately stresses the inseparable bond between logistics and operations adding strength to the point that without one, the other cannot function. Although not meant to be a book review of FM 100-5 Operations, a brief synopsis of the concepts considered during its re-write will help to frame the importance of its impact on CSS doctrine, specifically CSS planning models.

In early 1998, five concepts were explored by the FM 100-5 Operations writing team in an attempt to analyze doctrine and validate its relevance. The new direction these ideas hoped to find did not uncover a new doctrine, rather, it did produce a new way to think about seeing the terrain, enemy and us. The topics of these papers were: *The Doctrinal Focus of FM 100-5, Operations, The Range of Army Operations, The Operational Framework, The Visualize, Describe, Direct Methodology and Balancing Operations, Leadership, and Training Doctrine.*[49] All of these documents impact on how doctrine accomplishes the logistic support of the force. Also, all of these documents facilitate command and control through

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communication. The resulting manual emphasizes that the Army will operate as a member of a joint force. These new concepts are applicable to CSS doctrine and will shape its character to meet the needs of the army that operates in a joint environment.

The doctrinal focus of FM 100-5, Operations (Draft) is "...a comprehensive doctrine providing direction for all Army operations."[50] The broad spectrum in which the Army will most likely operate spans the continuum from peacetime engagement to general war. A specialized or economy of force army robs the nation of flexibility. The potential for general war has subsided due to collapse of the Soviet Union, however the possibility of war still warrants preparedness. Other asymmetric threats continue to emerge that threaten national interests on an increasing basis. More likely, in the near term, are joint force applications will deter war. These deterrent actions may imply military force on force (in the cases of Panama and Iraq) or may take on other forms where diplomatic, informational and economic measures reinforced by military presence, support, relief or combinations of these are necessary to stabilize areas important to U.S. national security. Some action may take the form of war with little or no contact (Operation DESERT THUNDER, Kuwait/Iraq 1998), or the inverse may occur where stabilization may involve repeated clashes between forces on a small, but intense scale (Bosnia and Kosovo). Escalation is the danger. Deterrence is often the need. The potential for war still exists and the cost is an Army that can meet the needs of a nation.

Two specific components of the new FM 100-5 Operations (Draft) imply an immediate need to revisit how to think about Army CSS doctrine found in FM 100-10, Combat Service Support. They are *The Operational Framework*, and *The Range of Army Operations*.

The Operational Framework adopted by FM 100-5 Operations (Draft) encompasses simultaneous and sequential operations in distributed contiguous and non-contiguous operational environments. The President's National Security Strategy and the National Military Strategy both stress the importance of Army core competence of defending the United States. Coupled with this requirement is the need for peacetime engagement on a global scale. The tension between these two difficult tasks results from the possibility of transitioning to fighting two near simultaneous major theater wars (MTWs). The common thread in each is prompt and sustained operations on land, which is the responsibility of the Army. The operational framework is guided by National Security Strategy, which forms the basis for military action.[51]

Over the past 80 years, this strategy reflects the will of the nation and has transitioned from isolationism (WW I), total victory (WW II) and containment (Cold War), to the present strategy of engagement. "The security strategy of engagement has extended the range and scope of military actions into the realm of stability and support actions."[52] The Army's range of military operations now extends to that of Offense, Defense, Stability and Support Operations.

Chapters 7 through 10 of FM 100-5 Operations (Draft) articulates the Army's unique perspective of the Range of Military Operations as it is nested within the joint doctrinal spectrum of War and Military Operations Other Than War (MOOTW).[53] Joint doctrine identifies this range as Peacetime Engagement, Operations Other than War and War.[54] Army doctrine drills down to a more specific description based on capabilities of Army forces relative to its purpose. FM 100-5 Operations (Draft) more adequately portrays this environment in the framework of Offense, Defense, Stability and Support (ODSS) operations. The ODSS framework is specific to the Army and characterizes its role within the joint spectrum of conflict. This range of operations clearly requires participation of land forces to be successful. Offensive operations remain the principal focus of Army doctrine while Defense, Stability and Support enable deterrence or buy time to conduct or resume offensive operations.[55] Combat Service Support is essential at all levels of war within this range.

The urge to selectively scan instead of read Army doctrinal manuals can be a bad habit. The reader that fails to digest the entire FM 100-5 Operations (Draft) and will miss crucial relationships derived from synthesis of a complex BOS/BOF unity. Although each chapter of FM 100-5 Operations (Draft) (with only minor exception) focuses on a specific BOF, the relationships that bind them are perhaps most important to gaining appreciation for the holistic nature of Army operations. Combat Service Support, as it relates to the other functions, is no exception.

Chapter 12, *Combat Service Support* of FM 100-5 Operations (Draft), does not stand-alone as the sole guide for subordinate Army CSS doctrine. This chapter must be read with perspective derived from preceding chapters in order to synthesize the holistic nature of operations and the complex role CSS plays. Failing to comprehend the importance of integration may limit perspective when interpreting FM 100-10 Combat Service Support (Draft). This is a monumental task for junior planners and commanders. Chapter 6 of FM 100-5 Operations (Draft) frames the Army range of operations from a full spectrum point of view.

Other chapters treat CSS as an equally important facet of the COP. This recurrent theme of approaching problems holistically is the strength of FM 100-5 Operations (Draft).

Specifically, at the strategic and operational level, contents of Chapter 12, *Combat Service Support* nests with joint concepts and stresses integration of CSS and operations. Although service components are responsible for their own forces except when otherwise directed, it is clear that combatant commanders may exercise directed authority for logistics to maximize specific service strengths and reduce duplicated effort. At the tactical level, Chapter 12 links unique characteristics of the range of Army operations with CSS functions that are likely to take priority in each type of operation.[56] Most importantly, this chapter stresses the diversity of *Stability* operations and prompts the reader to realize that CSS in Stability operations could exhibit characteristics of offensive and/or defensive operations. The theme for *Support* operations from Chapter 12 is that " CSS may be the decisive component of the Army force..."[57] This is a relatively new twist for operational planners which challenges planning paradigms reinforced by maneuver centric habits. Although Chapter 12 elicits a primer toward CSS in each type operation (ODSS), a deeper approach to thinking about CSS within the range of Army operations is necessary. Planning models provide a good point of departure.

How leaders think about applying combat power within the range of operations is key. Clear understanding of the problem is the principal goal in planning operations that anticipate military action. Complimentary support for such action is equally important. The new FM 100-5 Operations (Draft) does not change the existing framework of operations, it merely expands the realm of the possible by providing a different way to look at it. This wider approach stresses appreciation for the non-linear battlefield.

The joint character of military forces employed today force the planner to view battlespace from a new perspective. This perspective is derived from relevance of the Army, and its component responsibilities, with regard to a shrinking force in the full spectrum of operations. Getting a smaller, but more capable force to the point of action requires creative generation and sustainment of combat power so that action can begin. Thinking about how to do this is the genesis of military planning at all levels of war.

Operational Art acts as the lens that focuses planning on relationships. The links that bind systems to systems represent the rest of the COP beyond straight analysis via the science of war. Measuring potential for success or failure is not always as simple as the math makes it appear. Chapter 12, FM 100-5

Operations (Draft) stresses Operational Reach and Sustainability as the primary focus of CSS at the operational and tactical levels of war. A linear thought process regarding these concepts limits the planner. Rear to front logistics support is no longer enough to develop the COP necessary to facilitate operational planning. Although these two facets of Operational Art guide the purpose of CSS, the remaining facets are essential to frame them in proper context. [58]

Expanding battlespace, compressed reaction times, diverse missions and conditions, technology and commercial logistics applications have expanded the dimensions of how leaders think about war. Two models, proposed in FM 100-5 Operations (Draft), provide a more holistic method of visualizing the military environment. They are the *Decisive, Shaping and Sustaining Methodology* and the *Visualize, Describe, Direct Methodology*.

The *Decisive, Shaping and Sustaining* model links distributed action to a single purpose oriented on strategic aim across time and space. The *Decisive, Shaping and Sustaining* methodology more succinctly visualizes the battlespace and focuses on what decisive action is to be taken and the relationship of actions to shape and sustain the decisive effort to produce desired effects. This method encompasses both contiguous and non-contiguous environments characteristic of today's threat. The *Close, Deep, Rear* methodology has not been put aside. In the new manual, it has become *one* way to describe visualization and gain a shared understanding of a problem. The expanded appreciation for battlespace (depicted by *Decisive, Shaping and Sustaining*) framed by height, breadth, depth and time strengthens visualization and enhances awareness. [59]

The result of combining how the commander visualizes the battlefield, communicates this visualization to subordinates and directs action to achieve stated ends requires a more intense appreciation of the environment. Time, space, combat power and purpose form the dimensions in which decisions are made. These are not always neatly linked in linear or sequential fashion implied by close, deep, rear methods of thinking. Technology has enabled shaping operations to occur simultaneously in separate spaces. Likewise, sustaining efforts must often reach into non-contiguous environments. Mass is possible in time as well as space due to technological advantage and power projection systems. Decisive actions now occur at more than one point in the battlespace and may be iterative. Time and space do not change, however, distribution of combat power and unity of purpose extend beyond the traditional and somewhat

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flat, echeloned approach of the close, deep and rear methodology found in the 1993 version of FM 100-5 Operations.

Consistent with development of planning models is how to communicate operational concepts so that the force acts as one in accomplishment of commander's intent. Nesting becomes a key concept that strengthens the link between the tactical commander's action and the operational commander's visualization of end-state. Think back to chapter one and the purpose of doctrine. Command and control is enabled by communication. Doctrine provides the common point of reference for planners (and commanders) to develop a shared understanding of the problem to be solved. Nested doctrine is essential to perpetuate shared understanding of time, space, combat power and purpose. Clear direction is the responsibility of the commander. Doctrine guides this by providing a common reference within the scope of the theory of war and simplifies the essence of intent when language fails to do so. Communicating that direction to enable command and control is also a difficult task.

FM 100-5 Operations (Draft) proposes an enhanced means to communicate vision. *The Visualize, Describe, Direct Methodology* is not a new concept, however, the new FM 100-5 Operations (Draft) takes it one step further by "...providing a systemic approach consistent with the 1993 version, and flexible enough for operations in a diverse and complex mission environment."[60] The new manual does this by stressing the relationship between Battlefield Operating Functions (BOF) and Battlefield Operating Systems (BOS). "The BOF are a conceptual means to think about and describe the commander's vision of the battlefield. The BOS are the physical means (e.g., soldiers, equipment, and units) organized to accomplish the commander's vision through action."[61] Traditional considerations such as principals of war, tenets of operations and METT-T [C][62] still form the basis of visualization, however, the BOF and BOS relationships overlaid in time, space, combat power and purpose help the commander to better see the enemy, the terrain and himself. More importantly by connecting these thought enablers, the commander (and the planner) can better visualize complex problems, describe this visualization adequately through the operational framework model (above) and direct (or command) action to achieve desired ends. Changing or expanding the way leaders think about their complex environment does not complete the task. Supporting functions are also important.[63]

In summary, The perspectives in which operations and logistics view military problems are fundamentally different to a point. The purpose of logistics is to enable operations. The purpose of operations is to gain the advantage relative to the threat. Neither of these efforts can be successful without the other. Their common focus is the problem (the threat). In abstract terms this point is where the perspectives merge to focus on the relationships necessary to defeat the threat while perpetuating friendly strengths. Much like the view through a binocular…if the eyepieces are spread too far apart, one must perceive an image through one view or another. Doctrine serves to draw the eyepieces together for each planner viewing the problem so that the image can be seen in unison through both t he logistics and the operations perspective. The synchronized application of each perspective gives the problem depth and enables perception of distance analogous to space and time in terms of military planning.

Chapter Five: Merging Perspectives

This chapter deals specifically with Army CSS doctrine as contained in FM 100-10 Combat Service Support (Draft). Although this manual is under revision as a result of the re-writing of FM 100-5 Operations (Draft), it is important to identify the key links and means necessary to nest CSS concepts within operational models and promote unity of effort in military problem solving.

Combat Service Support (CSS) is defined in FM 100-10 Combat Service Support (1995 as " [t]he essential capabilities, functions, activities, and tasks necessary to sustain all elements of operating forces in theater at all levels of war."[64] Combat Service Support is distinctly different from logistics as it represents the means by which logistics is accomplished.

The essence of Army CSS is best depicted through a systems based description. Detrich Doerner described a system as a network of many variables in casual relationship with one another. A system has complexity, interaction and variables.[65] Combat Service Support is a complex system, deeply embedded in the larger systems of logistics and war.

Combat Service Support is a unique Army concept that translates principals of military logistics, guided by the theory of war, into action that supports land-based forces in Army, joint and multinational environments. Combat Service Support is distinct and measurable. It has organization, purpose and is linked to the larger concept of logistics within the theory of war. Framed by tenets of Army doctrine (agility, initiative, depth, versatility and synchronization), CSS allows the Army to operate at all levels of war within the guidelines established by joint doctrine. These tenets provide forward impetus and stimulate CSS to remain active and continually seek ways of improvement. It is this forward-looking theme that reinforces continued full spectrum dominance demanded by Joint Vision 2010.

Army CSS is a versatile and capable support system. Army CSS is becoming a distribution based system. The Army is also developing a modular support structure capable of meeting the force projection needs of the Army. The Army logistics structure leverages the economic strength of the United States. Reach-back links the industrial and technological power of the national economy to the needs of forces in the designated theater and provides the Army with a tremendous capability.

Characteristics of Army CSS allow Army logistics efforts to set conditions for operational and tactical success. Combat Service Support is responsive to the needs of the force. It integrates operational efforts and strengths of other services to perpetuate a solid base of support for forces operating in extended time and space. Army CSS is responsive to the needs of the force and has the ability to meet changing requirements on short notice.

Responsiveness is the key to developing, maintaining and sustaining combat power. Army CSS does this by anticipating requirements before they present crisis situations and maintains forward impetus that reduces uncertainty and promotes flexibility. Combat Service Support embraces economy without reducing effectiveness. Initiative and improvisation are essential to its theme so that continuous, flexible and responsive support is available to the combatant commander at all times. Although innately complex, CSS strives to retain simplicity of action and reduce unnecessary duplication of effort.

Finally, continuity of action adds a quality of resilience to CSS found critical to military logistics. In summary, CSS is much more than simply supplying the force. It must operate in a lethal environment. It is linked to war i.e., inseparable.

The principal effect that FM 100-5 Operations (Draft) has on CSS doctrine is the expanded range of operations in which the Army takes part. Traditional offensive and defensive concepts remain the bedrock of operational doctrine. Stability and support operations, however, continue to dominate today's military environment. In addition to the diverse nature of stability and support operations, the added complexity of non-contiguous operations challenges linear CSS organizational models to connect in both time and space to meet the needs of the force. Another consideration is that CSS forces may in fact become the main effort in stability and support operations, bumping traditionally front seat battlefield operating systems like maneuver and fire support to the back seat as a shaping or sustaining operations.

The most profound impact on Army CSS planning models may be the expanded range of military operations. The range of military operations has become less routine and more unpredictable. Previous categories of military operations (peace, conflict and war) limit planning perspectives under emerging keystone doctrine. As the U.S. Army wrestles with re-evaluation of doctrine, the reality of defining the range of military operations in today's complex environment is a significant hurdle. This doctrine must function under a comprehensive keystone doctrine of Offense, Defense, Stability, and Support (ODSS)

operations nested within joint categories of War and Military Operations Other than War (MOOTW). Logistics planners must seriously consider these new environments and likewise evaluate the utility of operational-level CSS doctrine. Tensions are likely to surface with CSS doctrine's attempt to capture concepts that apply in both contiguous and non-contiguous environments. Stability and Support operations represent both the most probable and most difficult application of these concepts in the near future.

Averting war is the object of engaging in Stability and Support operations.[66] The former orients on international interests while the latter focuses on support to national infrastructure. Stability and Support operations, often performed under war-like conditions with less than war-like rules of engagement, are inherently difficult for military forces whose charter is to fight and win the nation's wars. These two environments represent today's most common crises in which military forces are employed. CSS doctrine has yet to address the complexity of these environments.

As Army focus remains on land combat, FM 100-5, Operations suggest a force capable of conducting Offensive, Defensive, Stability, and Support Operations. Offensive and defensive operations remain familiar terms describing families of military operations that represent the Army's warfighting purpose. These categories translate into clear operational tasks that mesh nicely with the strategic aims of war. Stability and Support operations, however, represent the gray zone between peace and war. Defining the role of the Army in this buffer between war and peace has eluded succinct definition to date. Nonetheless, Army forces face increased challenges. The new FM 100-5 Operations (Draft) expands on potential to operate in complex environments where "pure" categories of peace, conflict or war may never attain a distinct shape that fits existing planning models. This potential, coupled with the constant tension between political goals and the limited means to attain them, presents a significant challenge to military operational leadership; especially logisticians.

The new FM 100-5 Operations (Draft) expands on existing concepts of battlefield framework and spectrum of operations. Most important to CSS doctrine is that FM 100-5 Operations (Draft), and corresponding Department of the Army initiatives, implies the need for increasing the power projection potential of the existing force structure. Also implied are measures to transform the force to a configuration that is strategically transportable without loss of relative combat power given current and potential threats to national security interests. The goal guiding this transformation effort is the time

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standard set by the Army Chief of Staff to enter a theater with overwhelming combat power and force enemy culmination while conducting limited operations so that war can be averted.[67] Of the options that are possible, each of them targets in some shape or form, a reduction in the size of the CSS tail attached to operational force projection.[68] Combat Service Support doctrine must consider these changes.

FM 100-10, Combat Service Support (Draft)

Army CSS doctrine has been a victim of gradual change in operational environments. Combat Service Support planners realized this when two major theater wars developed in WW II (European and Pacific theaters). The result of this gradual change produced logistic paradigms that placed CSS in a back-seat role to the more creative and challenging world of operations. The importance of WWII, survival coupled with U.S. economic might created an incredible logistics capability. Dollars were not the major concern! This is no longer true in today's peacetime environment. Today, like before, the almighty dollar is the real power behind supporting a capable army. With the disappearance of the Cold War, and the disintegration of any military equal to U. S. military technological strength, dollars allocated to military strength are increasingly hard to come by. Army operational leaders have sensed changes and revisited doctrine to better enable a smaller force to remain relevant in a peacetime era while maintaining the ability to buy time for mobilization in case of major conflict. Combat Service Support doctrine must do the same.

Field Manual (FM) 100-10, Combat Service Support (1995) is the keystone document that articulates Army CSS doctrine. This document is currently under review but to date has yet to be coordinated with the new FM 100-5, Operations (Draft) which is to be published sometime in mid 2000. Ironically, the re-writing of FM 100-10 Combat Service Support (Draft) occurred during the same period as the revision of FM 100-5 Operations (Draft). Upon review of the FM 100-10 Combat Service Support (Draft), one immediately realizes that shared understanding of the spectrum of operations is present between these two documents but poorly articulated in FM 100-10 Combat Service Support (Draft). The linking mechanism between operations and CSS is situational awareness and how planners and commanders view the environment of conflict from a branch specific perspective as well as an operational one.

In a world environment where asymmetric threats to military operations have supplanted mass on mass, CSS assets may be considered critical vulnerabilities or even centers of gravity by enemy forces that do not posses the strategic or operational capability to engage U. S. maneuver forces head on. All of these

considerations warrant review of CSS doctrine beginning with linking how CSS and operational planners develop a common shared understanding of the problem, or situational awareness.

The new FM 100-10 Combat Service Support (Author's Draft) identifies three guiding principals that mold CSS doctrine, force structure, training, and technological improvements. These are *force agility*, *velocity of CSS* and *situational understanding*.[69] Situational understanding will be the focus of proceeding paragraphs as it is the unifying element that links CSS and operations. A complete analysis of the CSS doctrinal planning model, with emphasis on situational awareness, cannot proceed without considering operational art.

Operational art links the levels of war together. It ties operations and logistics together by emphasizing relationships of elements within each function to the problem. It facilitates development of a COP.

Overlaying the facets of operational art onto logistics principals and applying characteristics of CSS while conducting operational planning unlocks a whole new perspective on how to think about supporting Army and joint forces at any level of war.[70] This is perhaps the greatest impact that FM 100-5 Operations (Draft) has on U. S. Army CSS doctrine.

Field Manual 100-5 Operations (Draft) provokes a new way to look at the spectrum of conflict. By revisiting sound doctrinal concepts, enhanced by a fresh perspective of visualizing battlespace, the new manual stresses integration of Battlefield Operating Functions and the critical relationships that bind them to form a common shared understanding of military problems encountered by leaders at all levels of war. Operational art serves as the tool that captures these relationships, degrading stove-pipe like barriers that separate battlefield operating systems and promoting unity of effort in planning models at all levels. The coherent nature of this revised keystone document equalizes both the value and responsibility of CSS as a combat multiplier.

Operational logistics and operational art share common functional ground in that each focus on ensuring operations succeed.[71] Combat Service Support planners and commanders at the operational level must incorporate operational art in order to maintain a grasp on the dynamics of today's modern battlefield. Traditional models of offensive and defensive operations represent the base of institutional knowledge from which a majority of planners are schooled. Stability and support operations are quickly becoming the base

of experience for many planners, however, doctrine must equally account for all four environments as combinations of these can quickly present significant operational and likewise logistical challenges.

Operational art explores impacts of logistics, and other systems, relative to linking strategic aims with tactical means arranged to reach them. Military planners frequently find themselves unconsciously limited by established procedure, which prevents creative application of an active mental model in complex problem solving. The irresistible tendency to rely upon established analytical procedure is often the human flaw that disguises the roots of a common operational picture.[72]

The secondary status of CSS is dissolving. Combat Service Support is becoming a maneuver equal in relative terms. The way CSS doctrinal publications present the role of CSS and reinforce that this system as a significant combat multiplier becomes even more critical to sustaining the holistic nature of Army operations so intensely suggested by FM 100-5 Operations (Draft).

The Comparison

The original strength of Army CSS organization is its modularity. The arrangement of capabilities into building block form makes the Army CSS structure quite versatile. The theater becomes the environment in which CSS is arranged in time and space to meet the needs of the combatant commander. Within a theater, sub-environments form that may be contiguous and amenable to linear application of CSS capability; or, they may be non-contiguous, requiring innovative application of CSS assets over lines of communication that are not continuous or remain divergent from lines of operations. A comparison between the contents of FM 100-5 Operations (Draft) and FM 100-10 Combat Service Support (Draft) reveals that components necessary to construct this new perspective are present. By viewing the whole instead of the sum of its parts, one begins to see the importance of relationships between doctrinal principals that may greatly enhance a common shared understanding of a problem addressed in any military planning or execution sequence.

The figure at appendix 2 depicts major facets of Army doctrine used to guide how leaders think about integrating CSS into operations. The complexity inherent in these relationships immediately appears when one looks at the whole picture. This figure represents the countless complex relationships that give character to the environment of war. Three aspects of executing operations are important when examining this diagram: understanding the nature of the problem, developing a common shared understanding and

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articulating it to promote unity of action. Planners must accomplish these prior to committing significant forces to ends. Again, CSS is no exception. Every problem to which CSS is applied must be thoroughly strained through the planner's sieve of doctrinal understanding. More often than not, before assets can be committed to action, many iterations of solution generation must be visualized from both a scientific and intuitive perspective. The foundation of these solutions is the COP.

Planning operations requires leaders to understand the nature of the problem. In terms of the Military Decision-Making Process (MDMP), problem solving takes the form of mission analysis. This is the first and most important hurdle a collective staff must negotiate.[73] Deductions from this process will influence the commander's visualization of the battlefield and determine criteria that carry mission analysis forward into subsequent steps of the MDMP.[74]

Through analysis of the problem, planners must constantly consider seeing the enemy, the terrain and themselves. This promotes development of a shared understanding of the problem so that efforts can be synchronized to apply combat power within the commander's intent.

Finally, the problem must be articulated in such a way those superior, peer and subordinate leaders can synthesize its holistic nature and prepare specific assets, processes and systems to enable mission success.

The new FM 100-5 Operations (Draft) provides a better perspective on how Army leaders think about and articulate complex military problems. Its simple format, succinct language and solid joint foundation provides the necessary link to joint authoritative doctrine and sets the stage for supporting doctrine to nest with joint principals. The greatest advantage of FM 100-5 Operations (Draft) is its readability without jeopardizing comprehension. The manual targets an operational audience while clearly describing the holistic nature of Army doctrine yet drawing attention to the importance of sophisticated relationships inherent to the levels of war.

Chapter 12, FM 100-5 Operations (Draft), *Combat Service Support*, establishes a solid foundation for Army logistics and promotes a theme of integration instead of singularity when assessing the value of CSS to the more dominant battlefield operating systems. The contents of FM 100-10 Combat Service Support (Draft) supports the doctrinal theme embedded in this chapter, however, its format and message requires revision to maximize its usefulness as a keystone CSS document and as a guide for operational planners.

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Concepts presented in FM 100-5 <u>Operations</u> (Draft) do not signal a fundamental change in the basic construct of Army CSS doctrine. This statement, however, does not, imply that current planning models are in perfect harmony with keystone doctrine. Dynamics in force structure modifications (i.e. the interim brigade concept), deeper exploration of the range of military operations and added emphasis on joint interoperability is challenging the way leaders think about maximizing CSS to meet the needs of the force. Maximizing logistics effort has always been the theme of this manual, however, recent initiatives related to improving responsiveness and operational reach of a power projection army with a distribution based logistics system have begun to stress the mechanical aspects of the U.S. Army CSS structure. Although structural change may have some merit, it cannot be the sole focus of the logistics solution for the 21st Century.

The transformation of the CSS structure must be accompanied by a like transformation in how leaders think about applying principals of logistics and maximizing characteristics of CSS to strengthen the combatant commander's operational posture. The potential for this transformation springs from operational objectives for a relevant, capable land-centric force. The ability to project combat power to protect U.S. interests is the current focus of the Army Chief of Staff's CS/CSS Transformation Initiative. Limited strategic lift resources present a significant hurdle to time definite delivery parameters in multi-theater conflict scenarios. Potential solutions considered by military think tanks include changes in operational structures, increased projection capability, reduction of demand on strategic lift and adjustment of deployment and mobilization standards for force application. A common thread within all proposed solutions is reduction in the CSS footprint.[75] Doing more with less again becomes the theme of the military logistics planner. The trick is to do more with less without reducing warfighting capability. The new FM 100-10 <u>Combat Service Support</u> (Draft) must carry this message.

Field manual 100-10 <u>Combat Service Support</u> (Draft) lacks a central recurring theme necessary to define the scope of CSS doctrine and how to use it. This keystone CSS doctrinal manual must link "how to think" about CSS within operational doctrine. The principal message of FM 100-5 <u>Operations</u> (Draft) is that the Army thinks and fights as a joint team, incorporating the individual strengths of each service so that overwhelming combat power can be continually pressed upon the enemy. This joint purpose is rooted in Operational Art. The holistic nature of Army operations and the reduction of the BOS stovepipe mentality

are critical facets of this theme. The way leaders think about how CSS can influence Army and joint operations is key. The new FM 100-10 Combat Service support (Draft) must capture and clearly articulate the value of Operational Art as a cognitive tool that enables planners and commanders to develop a COP.

The current FM 100-10 Combat Service Support (1995) seems to focus only on providing support to the force within "pure" logistic parameters. CSS doctrine cannot remain so "flat" and still be useful in today's complex military environment. The integration of Battlefield Operating Functions and the complex relationships each function shares with the others sets conditions for a common shared understanding of the environment at all levels of war. Seeing the enemy, terrain and us is more than straight-line analysis and sequential processions of methodological steps. The process is iterative...almost living. The "so what" of analysis must lead to deduction and then result in action that occurs early enough to disrupt the enemy decision cycle and rapidly generate friendly advantage. FM 100-10 Combat Service Support (Draft) must take the same approach. Combat Service Support is not just about seeing us. It is a total concept that must consider the complete environment and realize that non-logistical factors affect logistics success as well.

The new FM 100-10 Combat Service Support (Draft) must identify and link current operational trends to future application of CSS structure. Military Operations Other than War, expanding battlespace and non-contiguous environments may require a new standard of measure for CSS.

Key to readability is how FM 100-10 Combat Service Support (Draft) services Operational Art and draws attention to its usefulness as a mental model that enables planning as well as execution of CSS. The new draft lacks reference to and integration of Operational Art in its body and inadequately articulates *how* to think about CSS within the full spectrum of operations.

Field Manual 100-10 Combat Service Support (Draft) lacks a specific planning focus. The manual details the mechanics of CSS structure but falls short of promoting a balanced perspective of *how* CSS integrates parallel BOS strengths and evaluates threat weakness in terms of CSS (Reverse BOS). Reverse BOS applications enhance Combat Service Support planning models.

A reverse BOS approach should be considered regarding enemy trends impacting military logistics.[76] Technology has enabled potential adversaries to employ economical or inferior means to delay, disable or defeat advancements in U.S. military capability. Recent trends include advanced cyber capability,

alternative doctrines, terrorism and information operations. The increasing possibility of chemical or nuclear use by a rogue threat is still a viable consideration that should also receive reverse BOS attention from a CSS point of view. The reverse BOS concept informs the planning process and widens the perspective of all planners, not just logisticians.

FM 100-10 Combat Service Support (Draft) does not service non-contiguous environments and poorly services CSS as the main effort. Combat Service Support does not stand-alone on the battlefield, however, it is possible for CSS operations to be the main effort. Maneuver, Fire Support, Intelligence, Air Defense, Mobility and Battle Command operating systems are integral parts of CSS success. In Stability and Support operations, CSS may become the decisive action while other BOS elements shape and sustain the integrity of the CSS effort.

Positive aspects of friendly CSS, merged with BOS specific contributions, and CSS consideration of threat vulnerabilities help to develop a COP which results in a more robust, survivable CSS system. This in turn promotes more efficient means to build, maintain and sustain combat power relative to the threat. This balanced approach is key to CSS planning.

Conclusion

Specific concepts contained within FM 100-5 Operations (Draft) affect CSS doctrine in a unique way. The impact of emergent concepts presented by the new manual provokes a shift in how leaders think about integrating CSS into operations. It is important to note, however, that the current framework of Army CSS doctrine is not fundamentally flawed or obsolete. Revised and emergent operational models may force leaders to look at CSS from a completely new perspective.

Historically, leaders considered CSS as a secondary effort. The terms *Service* and *Support* connote actions that were not considered primary to accomplishing the mission. On a linear battlefield, CSS operations occurred away from "or to the rear" of the front. Planning for CSS was conducted in rear operations centers. Logistics bases were found in rear areas and sustainment was generated from rear to front. Characteristics associated with rear operations will remain even in today's less linear environment. For example, Army forces will always try to have a secure base from which to conduct operations. Important, however, is integration of CSS into operations demands a forward impetus and an equal front seat in planning.

Moving logistical support forward and being forward are two totally different thoughts. The spatial aspect of CSS may not always require a rear to front approach. Noncontiguous environments present these new spatial challenges and must be considered by planners. Combat Service Support will most likely originate from a secure base opposite to the threat, however, the customer may not always be between the threat and the logistics approach or line of communication (LOC).

The concept of Close, Deep and Rear remains valid with respect to spatial aspects of the battlefield, however, the Decisive, Shaping and Sustaining model is more relevant to describing purpose instead of space. The diverse nature of CSS in an ODSS environment may require both of these concepts to adequately address how CSS enables maneuver operations. Stability and Support operations may require CSS oriented *decisive* action with maneuver functions initially conducting *shaping* and *sustaining* efforts. Additionally, CSS may take on a primary role in strategic or operational efforts while maneuver functions lead tactical applications. The ability of the planner to appreciate and understand the value of both methods may mean the difference between success and failure.

The principals of logistics and characteristics of CSS are solid. These principals focus on providing for the needs of the force. The relationships between these principals, focused by operational art, forms the foundation from which combat power is generated, employed and sustained. Spatially, CSS may still flow from rear to front, but planning must be less spatially oriented and more focused on the principals of logistics towards the achievement of a common purpose. There are three layers within this concept that planning must traverse before support can take on physical form that meets the needs of the force. Each layer represents a refining process that better enables the potential of CSS to contribute efficiently to solving complex military problems.

The theory of war with its complimentary theory of logistics is the core of the model. The origin of CSS planning is rooted in the logistics of conducting military operations. Understanding theory is essential to breaking the limitations of existing logistics planning processes and realizing that the holistic nature of war cannot be based on scientific analysis alone. Artful application of forces and resources is essential to doing more with less.

The second layer involves the Battlefield Operating Functions and systems (BOF and BOS) as they relate to the nature of the battlefield. Both are the conceptual means to think about and describe the battlefield. Battlefield Operating Systems are the physical means to accomplish these functions. The concepts presented by keystone doctrine are designed to integrate collective strengths of the Battlefield Operating Functions into one effort oriented on a single purpose. They take into consideration time, space, combat power and purpose as well as the cognitive and physical nature of the battlefield.

Planning must first define the nature of the problem and leaders must develop a shared understanding before forces can be applied to resolve the problem. Referring back to the diagram in chapter three, military problem solving involves complex environments with multiple variables.[77] Systems within systems create infinite numbers of relationships that obscure advantages as well as hide critical vulnerabilities. Uncovering these critical relationships requires more than simple analysis. Strategic aim guides leaders in problem solving. Once critical relationships are discerned, planners must then arrange operational forces and resources in time and space to protect friendly strengths and exploit enemy weakness towards the aim or purpose. The balance of friendly and threat considerations plays an important role in arriving at a feasible solution. Combat Service Support planning is not exempt from this responsibility.

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Commanders are continuously trying to visualize the battlefield. The BOF provides them the means to organize their intent and priorities. The BOS provide the means to take action as described by the BOF and achieve the commander's intent. Understanding the problem is one of the most critical steps of the planning process. It is at this point where most planning efforts derail. It is not a linear process. It is often necessary to begin working or solving a problem in order to totally understand it.
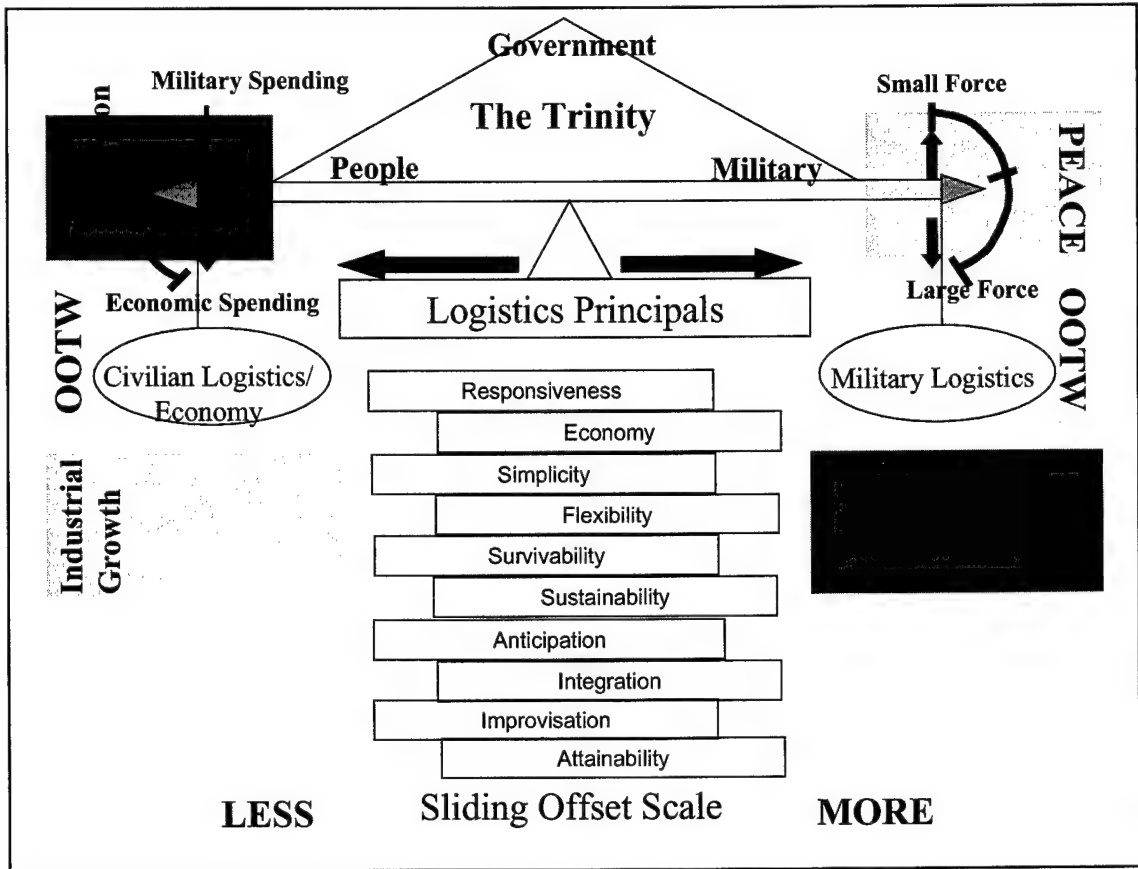
Operational art produces the final layer and provides a means to synthesize the entire process. This plane of integration represents the final straining of the problem and tests relationships against friction, the threat, human nature, uncertainty, violence and the range of military operations. Operational art promotes creativity and innovation in CSS planning by identifying the relative strengths and weaknesses of both friendly and threat systems and prompts leaders to ensure that everyone is working with a COP and a common understanding of what the problem is. Clear situational awareness is the result of this iterative process and the critical link between CSS and operations. By establishing this link, CSS assets can be applied to enable operations to succeed within the scope of the principals of logistics and the principals of war.

The complex environment of the Twenty First Century makes military analysis and synthesis more challenging. Military planners rely upon taught doctrinal principals to interpret complex environments. Future military problems may not always fit neatly into past definitions of the *battlefield*. Increased emphasis on *operational art*, and the acceptance of joint doctrine has driven military thinkers to re-evaluate Army doctrine and promote a nested unity of purpose by combining service potentials into one powerful joint effort. Emerging U.S. Army doctrine provides comprehensive doctrinal concepts that cover the full range of operations from War to Military Operations Other Than War (MOOTW). These concepts specifically redirect mental energy toward new perspectives inviting planners and commanders to view complex problems from a more holistic point of view. Emerging concepts, rooted in the essence of operational art, are not yet ingrained in the institutional knowledge base, hence they are not fully practiced by staff majority. The immediate value of doctrinal concepts contained in FM 100-5 Operations (Draft) promises to enhance shared understanding of authoritative doctrine and promotes nesting and unity of effort across the Army and joint spectrum of operations.

The challenge faced by planners, now and in the future, is the struggle to maintain the warfighting potential of shrinking Army forces while executing contiguous and non-contiguous operations within the scope of an ODSS framework. Each part of the Army committed to long-term stability or support reduces the force available to conduct offensive and defensive operations. As the Army evaluates its role in today's environment, dictated by national goals, it must examine its potential for relevance while remaining aware of its limits. The byproduct of this effort will impact CSS doctrine. Combat Service Support doctrine requires a similar review and must be proofed against its potential to sustain the force through transitional periods as well as its compatibility and interoperability with joint doctrinal concepts already accepted as authoritative.

Army Combat Service Support (CSS) doctrine is significantly affected by the re-writing of FM 100-5 Operations (Draft). Although the physical construct of Army CSS does not fundamentally change, how leaders think about applying it does. The gap between how operations and logistics planners view the environment must be closed by nesting FM 100-10 Combat Service Support (Draft) and FM 100-5 Operations (Draft). The completed FM 100-10 Combat Service Support (Draft) must capture the importance of expanding the thought processes behind applying comprehensive doctrine to compensate for the proposed reduction of the logistics footprint that looms on the horizon.

Appendix 1: Model of Military Logistics Theory

Government

The Trinity

Military Spending

Small Force

People   Military

PEACE   OOTW

OOTW

Economic Spending

Logistics Principals

Civilian Logistics/
Economy

Large Force

Military Logistics

Industrial
Growth

| Responsiveness |
| Economy |
| Simplicity |
| Flexibility |
| Survivability |
| Sustainability |
| Anticipation |
| Integration |
| Improvisation |
| Attainability |

LESS   Sliding Offset Scale   MORE

Military logistics theory presupposes the existence of a nation-state, or sovereign body that employs a standing military force to protect vital interests.[78] The complicated relationships embedded in the theory of war also diversely impact military logistics theory. They are symbiotic. Reaching back again to Clausewitz's concept of trinity, time and space are added to the dimensions of people, government and military. Preparations for conflict expend energy and consume resources long before weapons come to bear on an opponent. Actions over prolonged periods of time stress the resource base as needs of a military force increase relative to its goals. Recovery, or regeneration, after battle, continues to tax economic, diplomatic and information systems. Time becomes an invaluable resource or a significant threat. Space also shapes logistic effort and can present advantages or invite failure. The delicate balance of the trinity equation has a tremendous impact on the prosperity of the economic base and the military.

A second postulate of a complete theory of military logistics is that as military logistics potential increases, there is an inverse effect on short-term economic growth of a nation-state. The model referenced above represents the natural balance imposed by Clausewitz's trinity. As this balance shifts in relation to military force employment, second and third level implications are visible. As military logistics consumes more energy and resources, economic growth declines while mobilization stresses national resources. The principals of military logistics (defined by Joint Pub 4.0) also adjust to provide the force advantage. These advantages have associated disadvantages. The desire to increase the effect of one principal requires economy in another in order to maintain the balance inherent to the trinity. A zero-sum gain becomes apparent.

A third postulate of military logistics theory is that "…military logistics is a national responsibility requiring forward impetus. Military logistics implies continued maintenance, growth, development and integration of national and economic assets guided by civil authority to promote readiness for current and future conflicts."[79]

Julian Thompson's book, The Lifeblood of War, Logistics in Armed Conflict, promotes reflection regarding the link between the national logistics base and military application. Thompson cited historical examples to show that cooperation between Western economic foundations and military forces was less than stellar during WWII although the illusion of success hypnotized the general public in past conflicts.
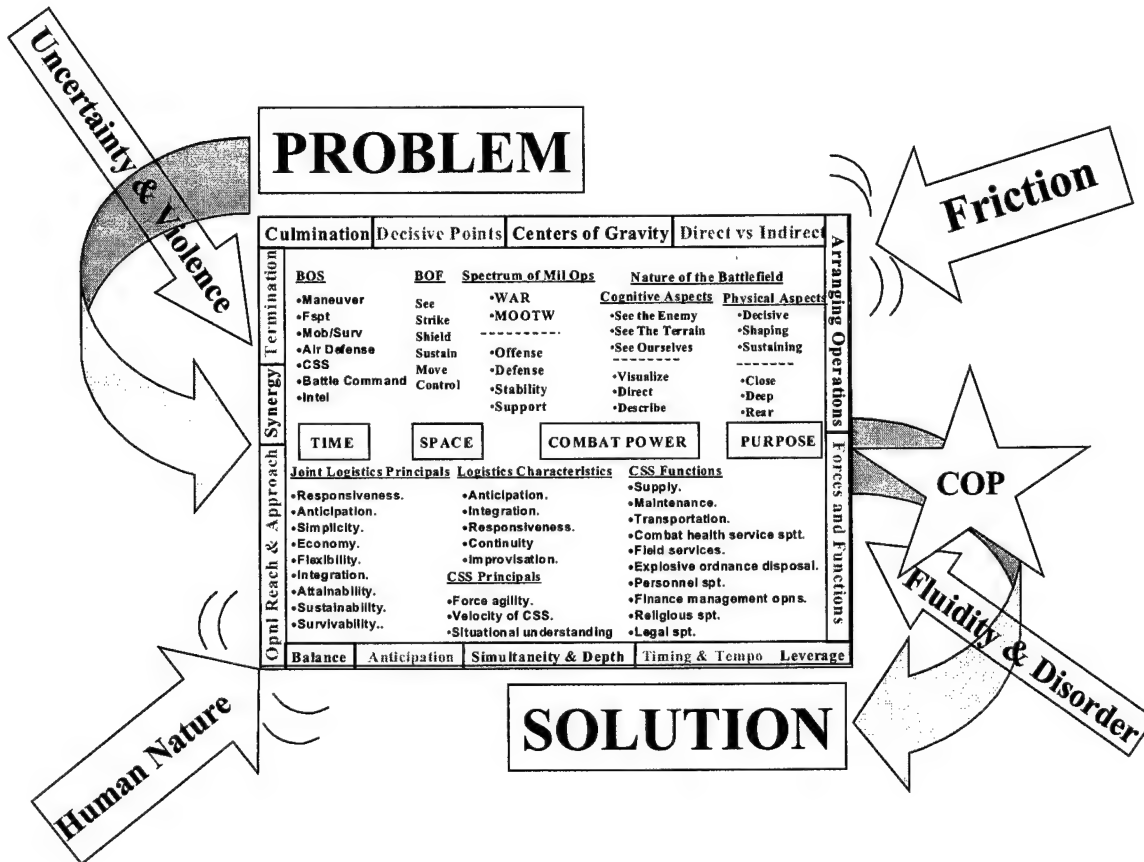
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Although published in 1991 in the shadow of disintegrating Cold War threats, Thompson's most feverish example was NATO's over-all weak logistics posture. He suggested that simply because the Soviet Union no longer presented a credible threat, there was still an intense need for Western Nations to retain armed forces and the means to supply them. Continuing this thought he added "As ever, logistics will play an important part, and the temptation to set up shop-window forces with no sustainability will need to be resisted if they are to provide the necessary deterrence."[80]

National responsibility adds more complexity to a theory of military logistics and further convolutes a clear description of its nature. As the United States has already experienced coalition conditions in facing an opponent (most recently in the Gulf War), future conflicts present the potential for cooperation between the U.S. national economy and the military. The possibility of multinational logistics efforts opens yet another box of uncertainty that logistics theory must deal with which brings about the final postulate.

Military logistics is continual and always "on."[81] It functions similarly during conflict as well as periods of peace.

Unlike civilian models, military logistics functions in any environment but possesses a warlike purpose most often influenced by a conscious, thinking enemy threat. During periods of conflict, military logistics actively seeks solutions to the problems of war. During periods of peace, military logistics does not rest and performs the same function oriented on preparing for future conflict. It is this difference that sets military logistics apart from civilian logistics.

Appendix 2: Integrated CSS Planning Model

PROBLEM

Culmination	Decisive Points	Centers of Gravity	Direct vs Indirect

BOS
- Maneuver
- Fspt
- Mob/Surv
- Air Defense
- CSS
- Battle Command
- Intel

BOF
See
Strike
Shield
Sustain
Move
Control

Spectrum of Mil Ops
- WAR
- MOOTW
- - - - - - - - - -
- Offense
- Defense
- Stability
- Support

Nature of the Battlefield

Cognitive Aspects
- See the Enemy
- See The Terrain
- See Ourselves
- - - - - - - - -
- Visualize
- Direct
- Describe

Physical Aspects
- Decisive
- Shaping
- Sustaining
- - - - - - -
- Close
- Deep
- Rear

TIME	SPACE	COMBAT POWER	PURPOSE

Joint Logistics Principals
- Responsiveness.
- Anticipation.
- Simplicity.
- Economy.
- Flexibility.
- Integration.
- Attainability.
- Sustainability.
- Survivability..

Logistics Characteristics
- Anticipation.
- Integration.
- Responsiveness.
- Continuity
- Improvisation.

CSS Principals
- Force agility.
- Velocity of CSS.
- Situational understanding

CSS Functions
- Supply.
- Maintenance.
- Transportation.
- Combat health service sptt.
- Field services.
- Explosive ordnance disposal.
- Personnel spt.
- Finance management opns.
- Religious spt.
- Legal spt.

Balance	Anticipation	Simultaneity & Depth	Timing & Tempo	Leverage

Left side (vertical): Termination — Synergy — Opnl Reach & Approach

Right side (vertical): Arranging Operations — Forces and Functions

Arrows: Uncertainty & Violence, Friction, Human Nature, Fluidity & Disorder

Star: COP

SOLUTION

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[1] Author's Note: All references to *FM 3-0 Operations (Final Draft)* are synonymous with *FM 100-5 Operations* (Draft). Changes to the format of this monograph were not made to preserve the integrity of the actual document studied (*FM 100-5 Operations (Draft)*). Minor changes are still occurring to *FM 3-0 Operations (Final Draft)*, but do not affect the conclusion of this paper. The renumbering of the Operations series field manuals was a recent change to more closely align Army keystone publication reference numbers with joint publications.

[2] Headquarters, Department of the Army, *FM 100-5 Operations (TRADOC General Officer Offsite Draft)*, 10 April, 2000, Chapters 7-10.

[3] Ibid.

[4] Ibid.

[5] Department of the Army, *Joint Pub 3-0, Doctrine for Joint Operations*, 1 FEB 95, Note: Facets of Operational Art: Culmination, Decisive Point, Center of Gravity, Direct vs Indirect, Arranging Operations, Forces and Functions, Timing and Tempo, Leverage, Simultaneity and depth, Anticipation, Balance, Operational reach and approach, Synergy, Termination

[6] Department of the Army, *Joint Pub 4-0, Doctrine for Logistics Support of Joint Operations*, 27 JAN 95

[7] Department of Defense, Approved Terminology, DOD Terms as of JMTGM-024-97 *NATO Only Terms Selected Acronyms and Abbreviations*, April, 1997"...In its most comprehensive sense, those aspects of military operations which deal with: a. design and development, acquisition, storage, movement, distribution, maintenance, evacuation, and disposition of materiel; b. movement, evacuation, and hospitalization of personnel; c. acquisition or construction, maintenance, operation, and disposition of facilities; and d. acquisition or furnishing of services."

[8] Headquarters United States Marine Corps, *Marine Corps Doctrinal Publication (MCDP) 4, Logistics*, Washington, DC, 21 February 1997, pg 2.

[9] Headquarters, Department of the Army, United States Marine Corps, *FM 101-5-1 MCRP 5-2A*, 30 DEC 1997. Military Operations Other Than War (MOOTW) (JP 1.02) Operations that encompass the use of military capabilities across the range of military operations short of war. These military actions can be applied to compliment any combination of the other instruments of national power and occur before, during, and after war.

[10] *United States Code, Title 10*, Aug 10, 1956, c. 1041, 70A Stat. 166

[11] Headquarters United States Marine Corps, *Marine Corps Doctrinal Publication (MCDP) 4, Logistics*, Washington, DC, 21 February 1997, pg 2.

[12] Headquarters, Department of the Army, United States Marine Corps, *FM 101-5-1 MCRP 5-2A*, 30 DEC 1997. Culminating Point: The point in time and space when the attacker can no longer accomplish his purpose, or when the defender no longer has the ability to accomplish his purpose. This can be due to factors such as combat power remaining, logistic support, weather, morale, and fatigue.

[13] Headquarters United States Marine Corps, *Marine Corps Doctrinal Publication (MCDP) 4, Logistics*, Washington, DC, 21 February 1997, pp. 6-8. Paraphrased: The human dimension is the most influential in that military logistics is not a purely mechanical process. Although logistics focuses primarily on the physical world, it also has an impact on the morale of a force. Again, the result is more important than the means that achieve it. Violence and danger are fundamental characteristics of war. The necessity to prepare for each is what sets military logistics apart from its civilian counterpart.

Friction affects military logistics. Physical manifestations of friction are often produced by enemy efforts, usually taking shape in some deadly form. This is a unique attribute of military environments. The seemed precision of logistics does not rule out the impact of uncertainty as once again, in the military environment, the enemy has a vote.

Fluidity and disorder are also characteristics of conflict that shape military logistics. In the former case, the nature of war is inherently fluid. Each individual event is likely the result of a complex combination of others with multiple outcomes. Military logistics must account for this and adapt. In the case of the latter, disorder is frequently the result. Again, logistics must maintain integrity of its purpose through chaos to meet the needs of battle.

Uncertainty and violence are distinguishing characteristics that separate civilian and military logistics. The environment in which the Army operates most often contains some kind of threat. Enemy, weather and terrain create uncertainty in conflict. Minimizing risk while maximizing effects is the underpinning of

military logistics theory. A conscious, thinking enemy not only presents uncertainty on the battlefield, but often adds violence. The common cliché', *the enemy always has a vote*, represents a unique characteristic of the environment in which Army operates. The combination of uncertainty and violence changes the nature of logistics and increases complexity beyond civilian logistics models.

[14] Headquarters, Department of the Army, *FM 100-5, Operations*, 1993, Glossery-5

[15] Ibid., Glossery-1

[16] Henry E. Eccles, (RADM Ret), *Military Concepts and Philosophy*, Rutgers University Press, New Brunswick, NJ. 1965, pp. 67-103

[17] Ibid.

[18] ibid.

[19] ibid., pg. 71

[20] Kenneth N. Brown, *Strategics: the Logistics-Strategy Link, A National Security Essay*, National Defense University Press, Washington DC., 1987, pg. 68

[21] ibid., pg 5, quoted from Martin Van Crevald, *Supplying War: Logistics from Wallenstein to Patton* (Cambridge University Press, 1977, p. 231. The lack of written material on the study of logistics is briefly decried simply as an unfortunate fact of life. By and large, thought on logistics is not recorded.

[22] Ibid., pg 10. "...strategic success will be proportional to logistics in the very degree to which logistics responds to the need. There is a proportional relationship between the two: knowing one and the factor which relate the two determines the other...Through responsiveness, strategy converts to logistics, and logistics converts to strategy. Neither responds without the other being present-strategy equals logistics multiplied by responsiveness."

[23] Sun Tzu, *The Art of War*, Translated by Ralph D. Sawyer, Westview Press, Boulder Colorado, 1994, pp. 177-197.

[24] Carl Von Clausewitz, *On War*, Edited and Translated by Michael Howard and Peter Paret, Princeton University Press, Princeton NJ.

[25] ibid., pg 4

[26] ibid.

[27] Headquarters United States Marine Corps, *Marine Corps Doctrinal Publication (MCDP) 4, Logistics*, Washington, DC, 21 February 1997

[28] The model at appendix 1 represents a visual image of these facets and a description of each is provided there.

[29] Pagonis, William G., *Moving Mountains, Lessons in Leadership and Logistics from the Gulf War*, Harvard Business School Press, Boston Massachusetts, 1992, pg. 2

[30] Department of the Army, *FM 100-5, Operations*, June 1993, pg. 2-12

[31] Schneider, James., quoted in War and Technology elective, School of Advance Military Studies, 15 FEB 00.

[32] Department of the Army, *FM 100-5, Operations*, June 1993, pg. 2-12., "Intelligence, Maneuver, Fire Support, Air Defense, Mobility and Survivability, Logistics and Battle Command."

[33] *Webster's Universal College Dictionary.*, Gramercy Books, New York, 1997.

[34] Headquarters United States Marine Corps, *Marine Corps Doctrinal Publication (MCDP) 4, Logistics*, Washington, DC, 21 February 1997, pp. 12-13

[35] Note: Reverse BOS refers to considering enemy strengths and weaknesses by using friendly battlefield operating system (BOS) parameters and components. By considering only friendly BOS advantages and disadvantages, the equation to derive a COP is incomplete.

[36] Headquarters United States Marine Corps, *Marine Corps Doctrinal Publication (MCDP) 4, Logistics*, Washington, DC, 21 February 1997, pp. 12-13

[37] Department of the Army, *Joint Pub 4-0, Doctrine for Logistics Support of Joint Operations*, 27 January, 1995, pg. II-2

[38] Ibid.

[39] Ibid., pg. V.

[40] Department of Defense, *Joint Vision 2010*, pg. 2, Together, the application of these four concepts by robust high quality forces will provide America with the capability to dominate an opponent across the range of military operations. This Full Spectrum Dominance will be the key characteristic we seek for our Armed Forces in the 21st century.

[41] Ibid., pg 24

[42] ibid., pp. V-VII

[43] ibid., pg. I-2

[44] ibid., pg. I-1

[45] ibid., pg. II-1

[46] Headquarters Department of the Army, *FM 100-5 Operations* (1993). Principals of War: (maneuver, objective, surprise, speed, mass, offensive, unity of command, simplicity and economy)

[47] Department of Defense, *Joint Pub 4-0, Doctrine for Logistics Support of Joint Operations*, JAN 1995, "The **art of logistics** is how to integrate the strategic, operational, and tactical sustainment efforts within the theater, while scheduling the mobilization and deployment of units, personnel, and supplies in support of the employment concept of a geographic combatant commander."

[48] Jerome G. Peppers, *History of United States Military Logistics 1935-1985*,Logistics Education Foundation Publishing, 1988, pg. 38

[49] Commandant , USACGSC (ATZL-SWV), *FM 100-5 (Draft) Concept Papers* website: fm1005@leav-emh1.army.mil

[50] Ibid., Concept Paper #1

[51] Ibid., Concept Paper # 2

[52] Ibid., Concept Paper # 2, pg 4

[53] Department of the Army, *Joint Pub 3-0, Doctrine for Joint Operations*, 1 FEB 95

[54] Department of Defense, *Joint Vision 2010*, www.dtic.mil/jv2010/briefings.htm

[55] Headquarters, Department of the Army, *United States Marine Corps, FM 101-5-1 MCRP 5-2A*, 30 DEC 1997. Stability and Support Operations: The use of military capabilities for any purpose other than war i.e., counter-drug, domestic emergencies, humanitarian assistance, MOOTW, peace operations etc...see endnote 65.

[56] Headquarters, Department of the Army, *FM 100-5 Operations (TRADOC General Officer Offsite Draft)*, pp. 12-6 thru 12-10

[57] Ibid., pp. 12-10

[58] Referenced in endnote 4

[59] Commandant , USACGSC (ATZL-SWV), *FM 100-5 (Draft) Concept Papers* website: fm1005@leav-emh1.army.mil , Concept Paper # 3

[60] Ibid., Concept paper # 4b

[61] Ibid., Concept paper # 4b... (BOF see, strike, shield, sustain, move, and control); (BOS— intelligence, maneuver, fires, air defense, mobility/countermobility/survivability, combat service support, and command and control,)

[62] Author's note: METT-TC acronym for: Mission, enemy, Terrain & Weather, Troops Available, Time and Civil Considerations

[63] Author's Note: *FM 100-5 Concept Papers* included an additional concept that visits the institutional spectrum of comprehensive doctrine...*Balancing operations, leadership, and training* doctrine is key to maintaining force integrity on a holistic scale, but a change in this balance has deep implications regarding readiness of the force. A comprehensive approach to maintaining this balance is an important facet of *FM 100-5 Operations (Draft)*. Doctrine forms the bedrock upon which leadership and training methods are built. Changes in operational concepts imply changes in the way the Army trains leaders and soldiers. Institutional changes are slow to occur and have a delayed impact on operations in the field. Any doctrinal revision must consider the entire spectrum of Army development so that an integrated approach can enable the Army as a learning organization instead of applying a band-aid for a short-term fix. As the active duty footprint continues to shrink, more reliance will be placed on reserve assets when technology cannot bridge the gap. Training the force implies the entire force...not just the active component.

[64] Department of the Army, *FM 100-10, Combat Service Support*, Oct 1993, pg. 1-1, derived from Joint Pub 1-02.

[65] Deitrich Doerner, *The Logic of Failure*, New York Metropolitan Books, Henry Holt and Company, 1996, pg. 73

[66] Department of the Army, *FM 100-10 Combat Service Support (Draft)*, Chapter 4, Definitions of ODSS:
- Offense: The primary purpose of the offense is to destroy or defeat the enemy. Types of offensive operations include attack, movement to contact, exploitation, and pursuit.

- Defense: The purpose of the defense is to defeat the enemy's attack by buying time, to economize forces, or to develop conditions favorable for offensive operations. Three main types of defense are mobile, area, and retrograde.

- Stability: The overarching purpose of stability operations is to promote regional and global stability. It involves the employment of Army forces outside the US and US territories to promote and protect US national interests by influencing political, civil, and military environments and by disrupting specific illegal activities.

- Support: The overarching purpose of support operations is either support to civil law enforcement or the relief of suffering by providing essential supplies and services to designated nations, organizations, and groups. It includes those operations in which the Army assists civil authorities to enhance civil capabilities to respond to crises until civil authorities can accomplish the required tasks without Army assistance.

[67] Author's note: Derived from transformation brief, SAMS 2000: 1xBde in 96 hours, 1xDiv in 120 hours and 5xDiv in 30 Days...

[68] Author's note: Four options appear possible. They are (1) Increase strategic lift capability; (2) Decrease size of the force to be lifted; (3) Forward deploy forces to reduce response time; and (4) A combination of the previous options.

[69] Headquarters, Department of the Army, *FM 100-10, Combat Service Support (Author's Draft 2000)*, Chapter 1

[70] Refer to Figure at appendix 2

[71] Department of the Army, *FM 100-5, Operations*, (Washington DC, June 1993), 12-2. . "The focus of operational logistics is to ensure that operations succeed."

[72] Steven T. Mitchell, SAMS Monograph, *Operational Art and its Relevance to Army Logisticians*, Dec 1999

[73] Department of the Army, *FM 101-5, Staff Organization and Operations*, 1997, pg. 5-4 : Military Decision Making Process: Receipt of Mission, Mission Analysis, Course of Action (COA) Development, COA Analysis (War Game), COA Comparison, COA Approval, Orders Production.

[74] Author's note: Mission analysis is an iterative process and continues throughout the MDMP.

[75] Author's note: Term used to describe the physical/organizational structure, assets, infrastructure and/or relationship of forces in an operational or tactical area to the task performed.

[76] Note: Reverse BOS refers to considering enemy strengths and weaknesses by using friendly battlefield operating system (BOS) parameters and components. By considering only friendly BOS advantages and disadvantages, the equation to derive a COP is incomplete.

[77] Diagram at Appendix 2

[78] *Webster's Universal College Dictionary*, Gramercy Books, New York, 1997, Nation-state: A sovereign state inhabited by a fairly homogeneous group of people who share a feeling of common nationality.

[79] Julian Thompson, *The Lifeblood of War, Logistics in Armed Conflict*, B.P.C.C Wheatons Ltd., Exeter, Great Britain, Copyright, 1991 Julian Thompson, pg. 332

[80] ibid., pg. 341

[81] Headquarters United States Marine Corps, Marine Corps Doctrinal Publication (MCDP) 4, *Logistics*, Washington, DC, 21 February 1997

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United States Code, Title 10, Aug 10, 1956, c. 1041, 70A Stat. 166.

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